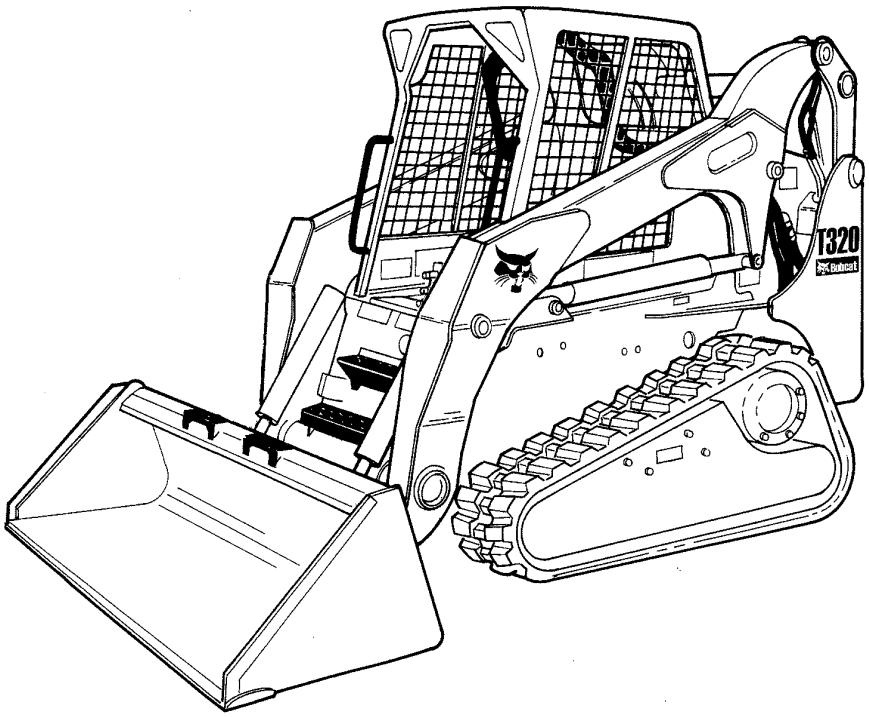
Bobcat®

Service Manual
T320 Compact Track Loader

S/N A7MP60001 & Above
S/N AAKZ11001 & Above



EQUIPPED WITH
BOBCAT INTERLOCK
CONTROL SYSTEM (BICS™)

6987046 (9-08)

Printed in U.S.A.

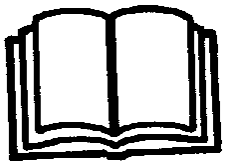
MAINTENANCE SAFETY

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-2003-0903

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

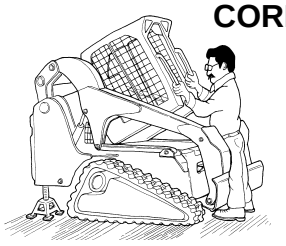
CORRECT



B-10731a

Never service the Bobcat Compact Track Loader without instructions.

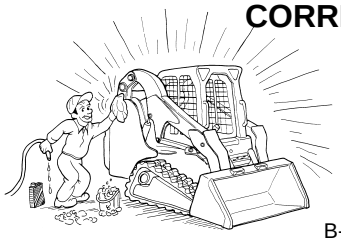
CORRECT



B-19110

Use the correct procedure to lift to lower operator cab.

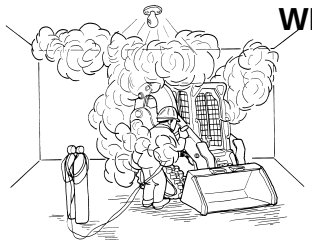
CORRECT



B-19109

Cleaning and maintenance are required daily.

WRONG



B-19108

Have good ventilation when welding or grinding painted parts.

Wear dust mask when grinding painted parts. Toxic dust and gas can be produced.

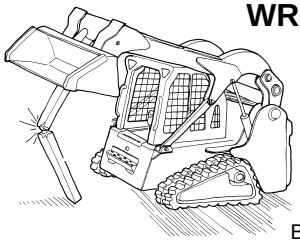
Avoid exhaust fume leaks which can kill without warning. Exhaust system must be tightly sealed.

WRONG

B-19111

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

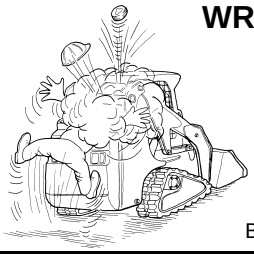


B-19107

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-19106

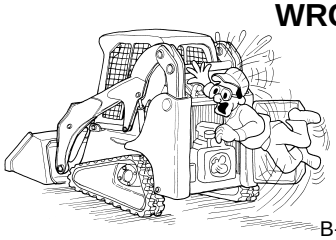
Stop, cool and clean engine of flammable materials before checking fluids.

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-19105

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.

MSW24-0805

ALPHABETICAL INDEX

ALPHABETICAL INDEX (CONT'D)

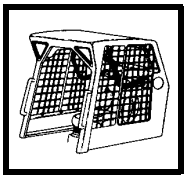
CONTENTS

FOREWORD

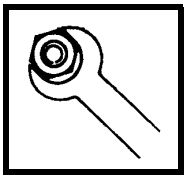
This manual is for the Bobcat loader mechanic. It provides necessary servicing and adjustment procedures for the Bobcat loader and its component parts and systems. Refer to the Operation & Maintenance Manual for operating instructions, starting procedure, daily checks, etc.

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

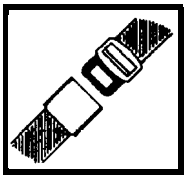
1. Check that the ROPS/FOPS (Including side screens) is in good condition and is not modified.



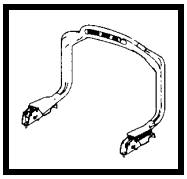
2. Check that ROPS mounting hardware is tightened and is Bobcat approved.



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



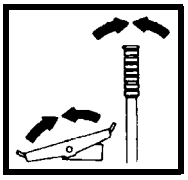
4. The seat bar must be correctly adjusted, clean and lubricated.



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

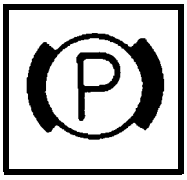
6. Machine signs (decals) must be legible and in the correct location.

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

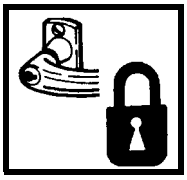


8. Check for correct function of the work lights.

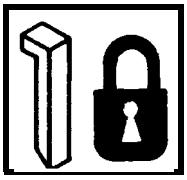
9. The parking brake must function correctly.



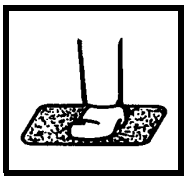
10. Enclosure door latches must open and close freely.



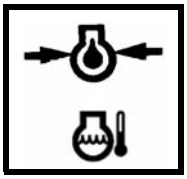
11. Bob-Tach wedges and linkages must function correctly and be in good condition.



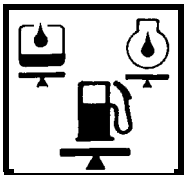
12. Safety treads must be in good condition.



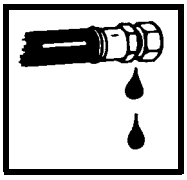
13. Check for correct function of indicator lamps.



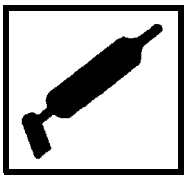
14. Check hydraulic fluid level, engine oil level and fuel supply.



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

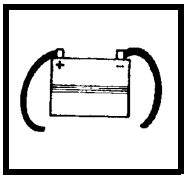


16. Lubricate the loader.

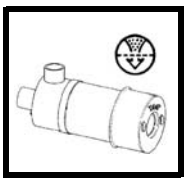


FW SSL-0308 SM

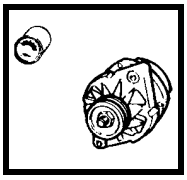
17. Check the condition of the battery and cables.



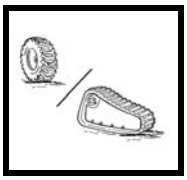
18. Inspect the air cleaner for damage or leaks. Check the condition of the element.



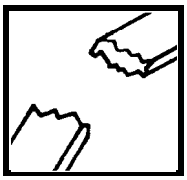
19. Check the electrical charging system.



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

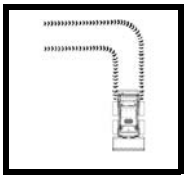


21. Inspect for loose or broken parts or connections.



22. Check for any field modification not completed.

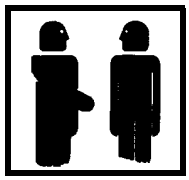
23. Operate the machine and check all functions.



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

25. Check function or condition of all equipped options and accessories (examples: back-up alarm, fire extinguisher, rotating beacon, lift kits, etc.).

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



CALIFORNIA
PROPOSITION 65 WARNING

Diesel engine exhaust and some of its constituents are known to the state of California to cause cancer, birth defects and other reproductive harm.

SAFETY INSTRUCTIONS

Safety Alert Symbol

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

WARNING

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

W-2003-0903

IMPORTANT

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

I-2019-0284

DANGER

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

D-1002-1107

WARNING

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

W-2044-1107

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

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

FIRE PREVENTION

Maintenance

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

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

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

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

Operation

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

Electrical

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

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

Hydraulic System

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

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

Fueling

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

Starting

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

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

Spark Arrestor Exhaust System

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

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

SI SSL-0308 SM

FIRE PREVENTION (CONT'D)

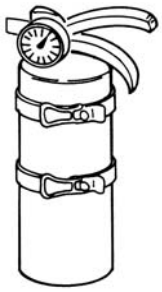
Welding And Grinding

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

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

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

Fire Extinguishers



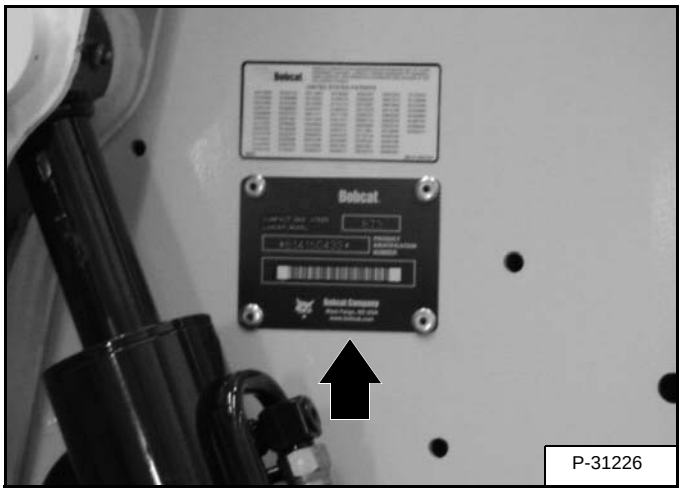
Know where fire extinguishers and first aid kits are located and how to use them. Inspect the fire extinguisher and service the fire extinguisher regularly. Obey the recommendations on the instructions plate.

SERIAL NUMBER LOCATIONS

Always use the serial number of the loader when requesting service information or when ordering parts. Early or later models (identification made by serial number) may use different parts, or it may be necessary to use a different procedure in doing a specific service operation.

Loader Serial Number

Figure 1



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

Explanation of loader Serial Number:

XXXX XXXXX

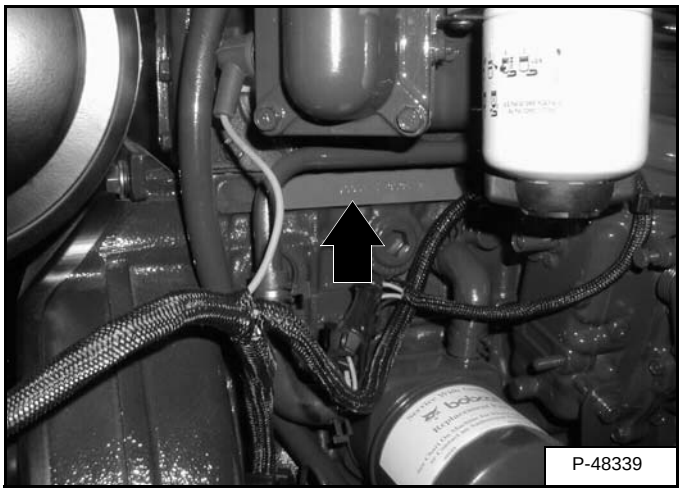
- XXXXX — Module 2. - Production Sequence (Series)
- XXXX — Module 1. - Model / Engine Combination

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

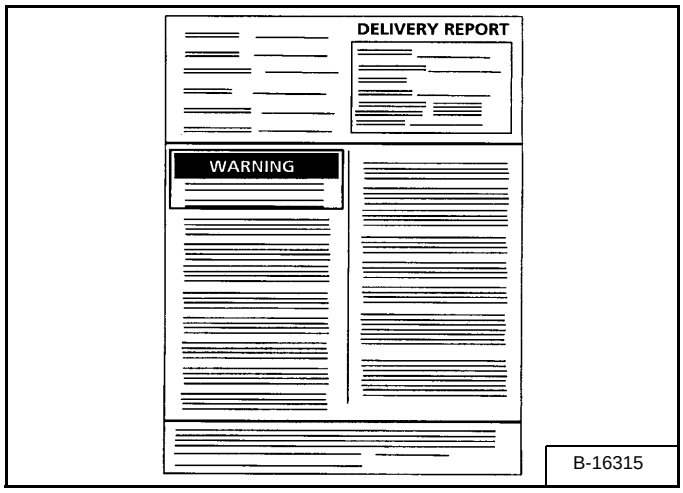
Figure 2



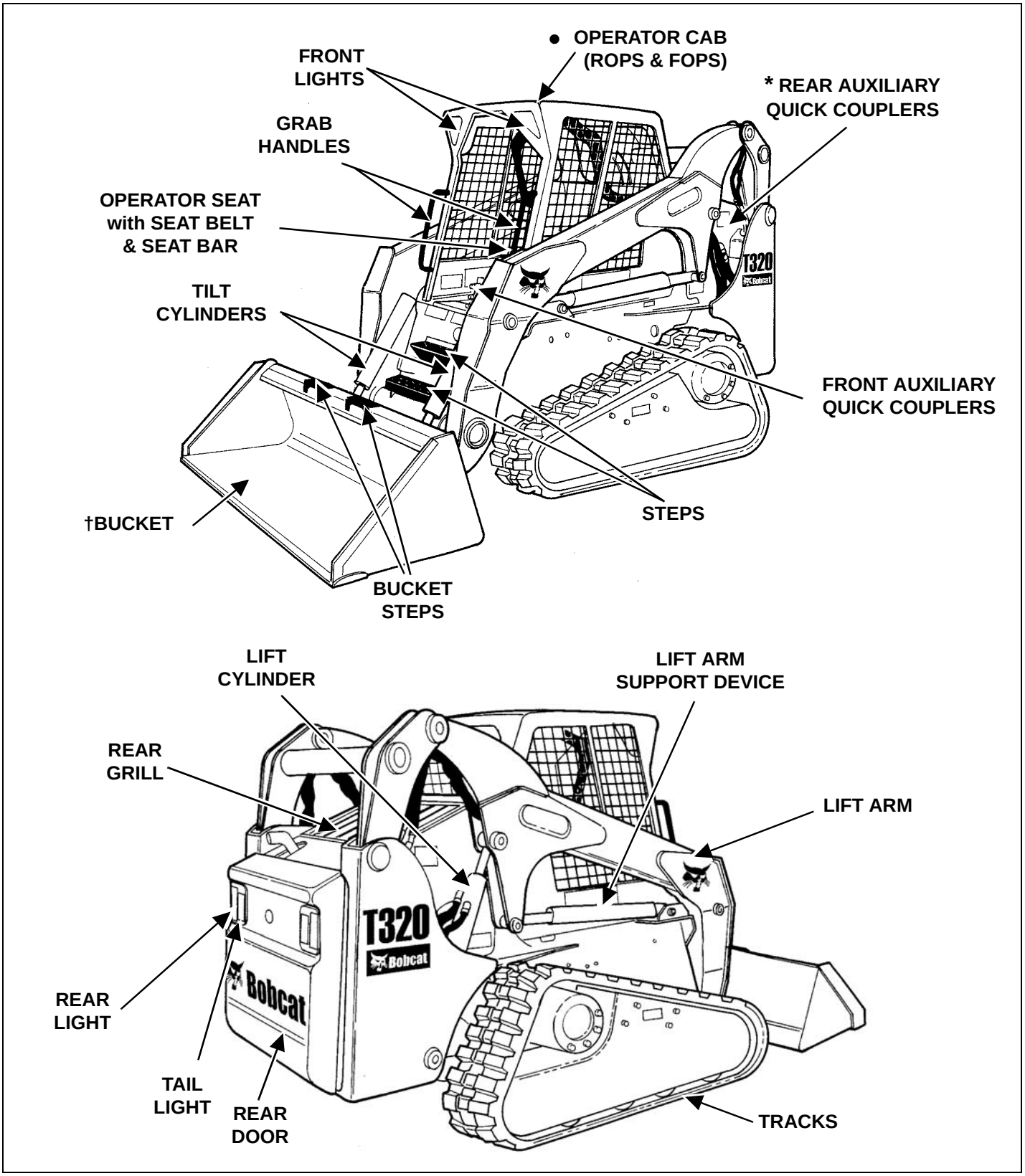
The engine serial number is located on the side of the engine (Item 1) **[Figure 2]** above the oil filter.

DELIVERY REPORT

Figure 3



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



* Option or Field Accessory

† Many buckets and other attachments are available.

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

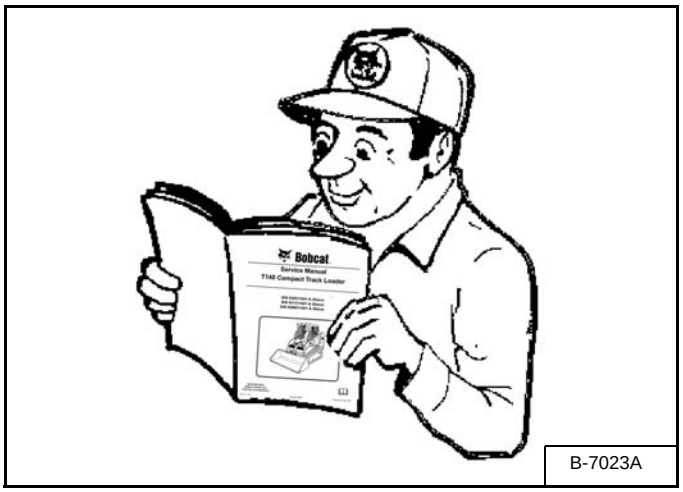
SAFETY AND MAINTENANCE

Continued On Next Page

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

Read the Removal & Installation, Disassembly & Assembly, etc. completely to become familiar with the procedure before beginning **[Figure 10-10-1]**.

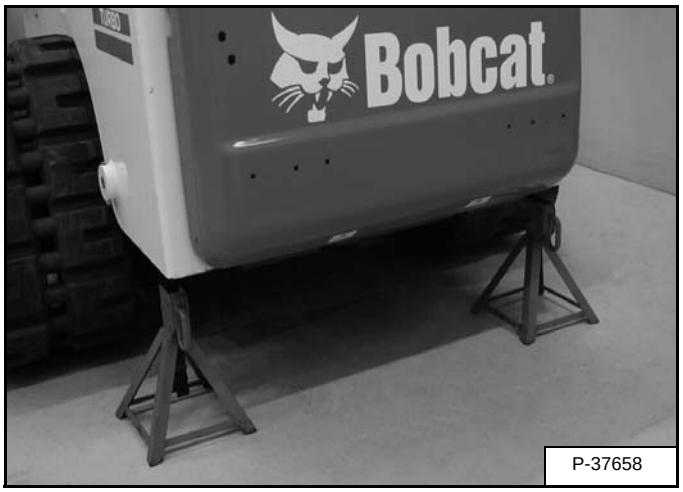
Always park the loader on a level surface.

⚠ 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.

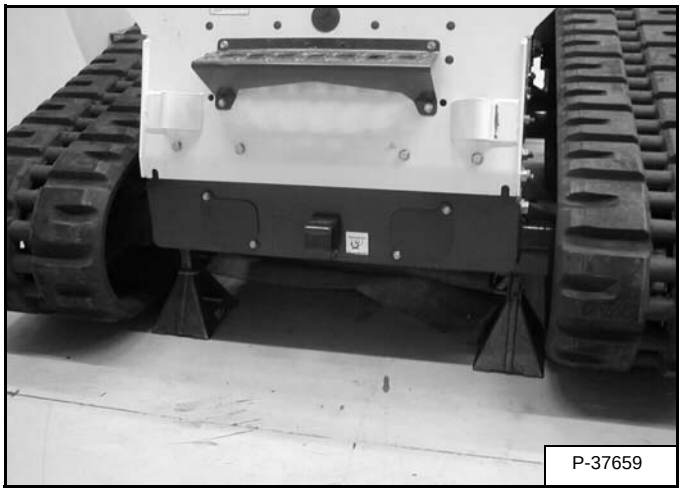
W-2017-0286

Figure 10-10-2



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

Figure 10-10-3



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

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

LIFT ARM SUPPORT DEVICE

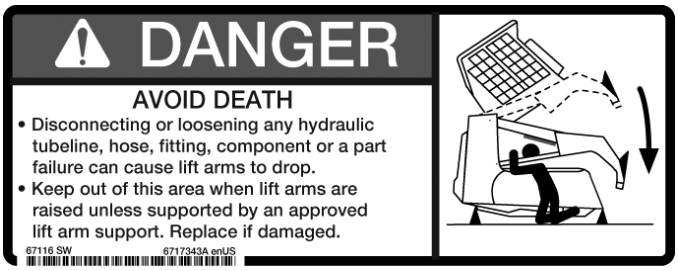
Installing

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.

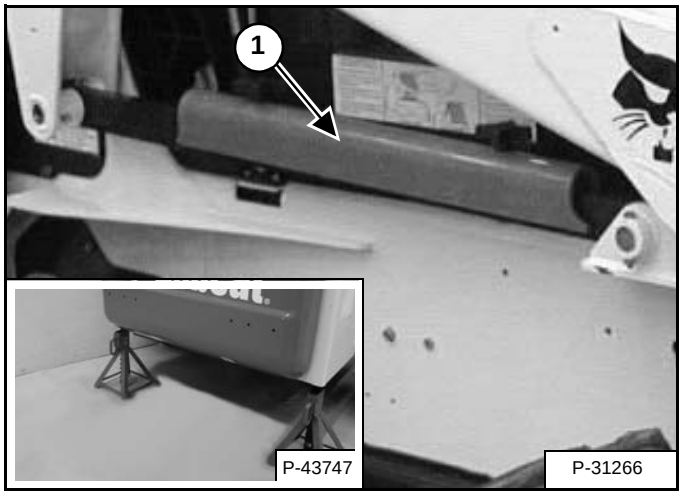
Service lift arm support device if damaged or if parts are missing. Using a damaged lift arm support or with missing parts can cause lift arms to drop causing injury or death.

W-2572-0407



Remove attachment from the loader. (See BOB-TACH (HAND LEVER) on Page 50-40-1.) or (See BOB-TACH (POWER) on Page 50-41-1.)

Figure 10-20-1



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

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

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

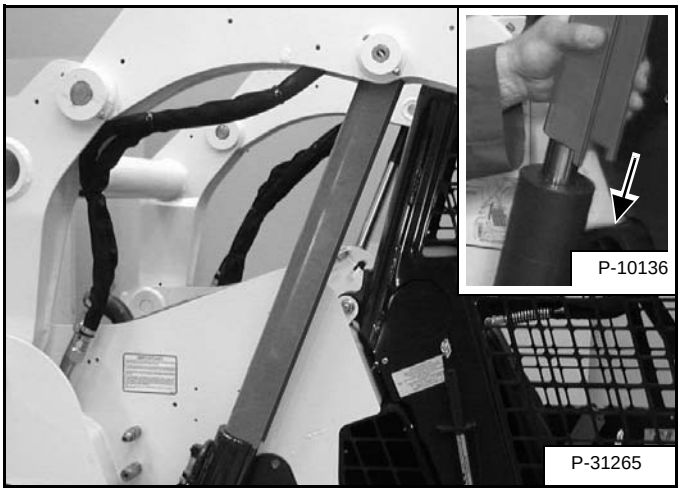
Start the engine and raise the lift arms all the way up.

Figure 10-20-2

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

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

Figure 10-20-3



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

LIFT ARM SUPPORT DEVICE (CONT'D)

Removing

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

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

Have a second person remove the lift arm support device.

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

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

Remove the jackstands.

OPERATOR CAB

Description

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

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

Level I

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

Level II

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

⚠ 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.

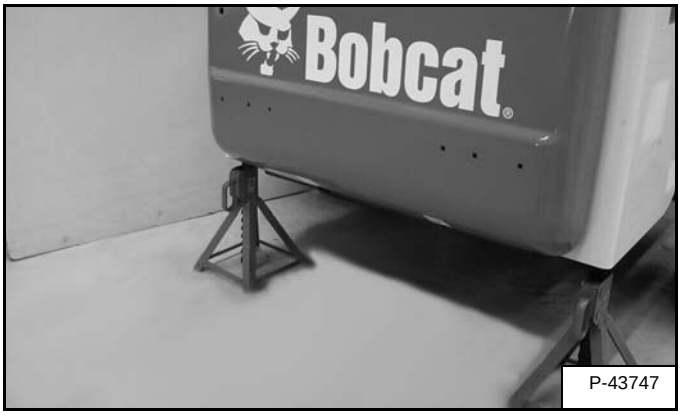
W-2069-0200

Raising

Always stop the engine before raising or lowering the cab.

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

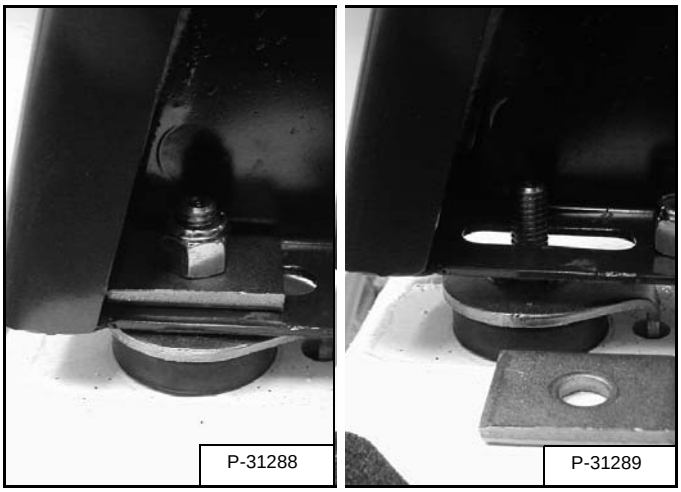
Figure 10-30-1



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

Raising (Cont'd)

Figure 10-30-2



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

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

Figure 10-30-3

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

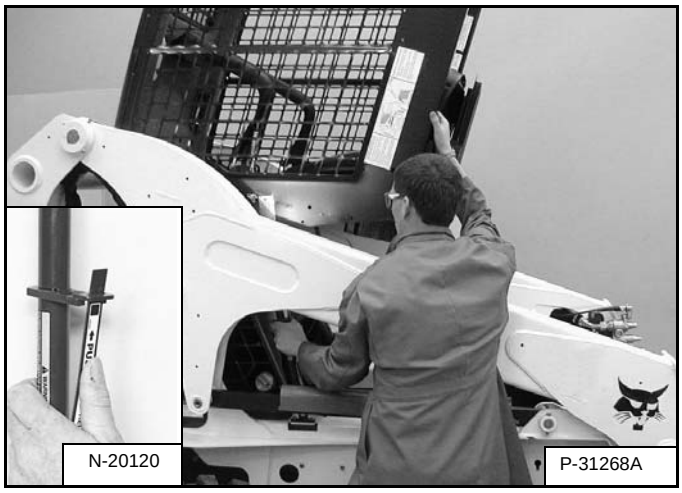
OPERATOR CAB (CONT'D)

Lowering

Always stop the engine before raising or lowering the cab.

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

Figure 10-30-4



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

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

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

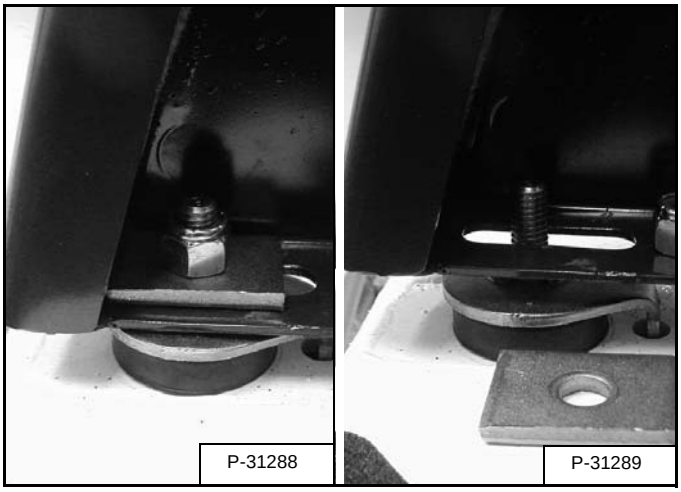
Support the cab and release the latching mechanism (Inset) **[Figure 10-30-4]**. Remove your hand from the latch mechanism when the cab is past the latch stop. Use both hands to lower the cab all the way down.

WARNING

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

W-2469-0803

Figure 10-30-5



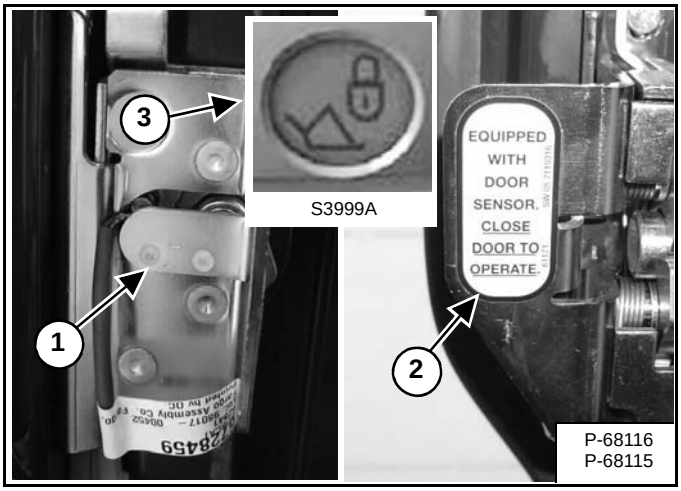
Install the plates and nuts (both sides) **[Figure 10-30-5]**.

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

Cab Door Sensor

This machine may be equipped with a Cab Door Sensor.

Figure 10-30-6



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

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

The LIFT & TILT VALVE light (Item 3) **[Figure 10-30-6]** will be 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 10-30-7

The LIFT & TILT VALVE light (Item 3) **[Figure 10-30-6]** 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 10-30-7]**.

Special Applications Kit

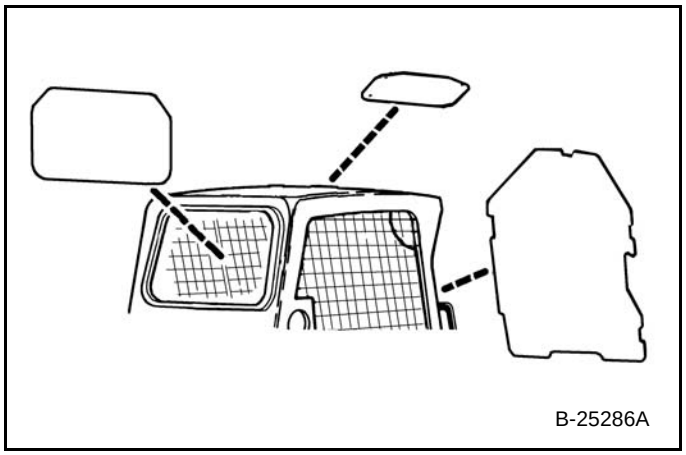
Figure 10-30-8

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



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

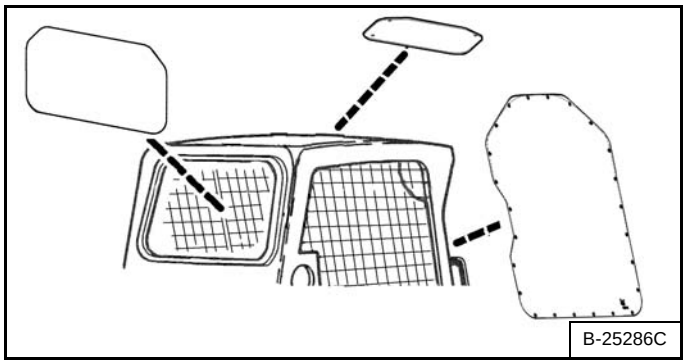
See your Bobcat dealer for availability.

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 operate windshield wipers on a dry surface.
- Do not clean with metal blades or scrapers.

Forestry Door And Window Kit

Figure 10-30-9



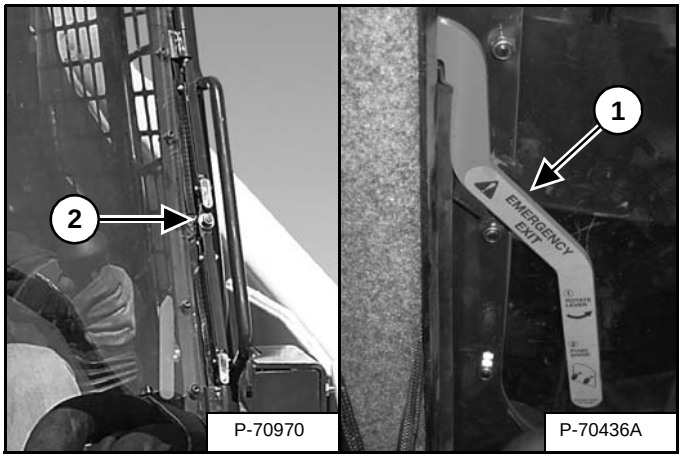
Must be used with Forestry Applications Kit to prevent flying debris and objects from entering the loader. Kit includes 3/4 inch thick laminated polycarbonate front door, top and rear windows **[Figure 10-30-9]**.

Forestry Door And Window Kit Inspection And Maintenance

- Inspect for cracks or damage. Replace if required.
- Order P/N 7140090 if door is damaged and needs to be replaced.
- 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.

Forestry Door Emergency Exit

Figure 10-30-10



- Inspect the emergency exit lever (Item 1), linkages and hardware (Item 2) **[Figure 10-30-10]** for loose or damaged parts.
- Repair or replace if necessary.

TRANSPORTING THE LOADER ON A TRAILER

Loading And Unloading

WARNING

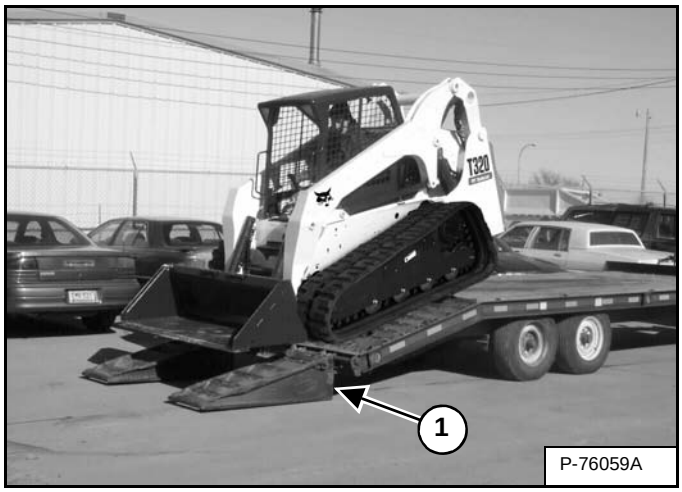
AVOID SERIOUS INJURY OR DEATH

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 weight of loader. (See Performance on Page SPEC-10-4)

Figure 10-40-1

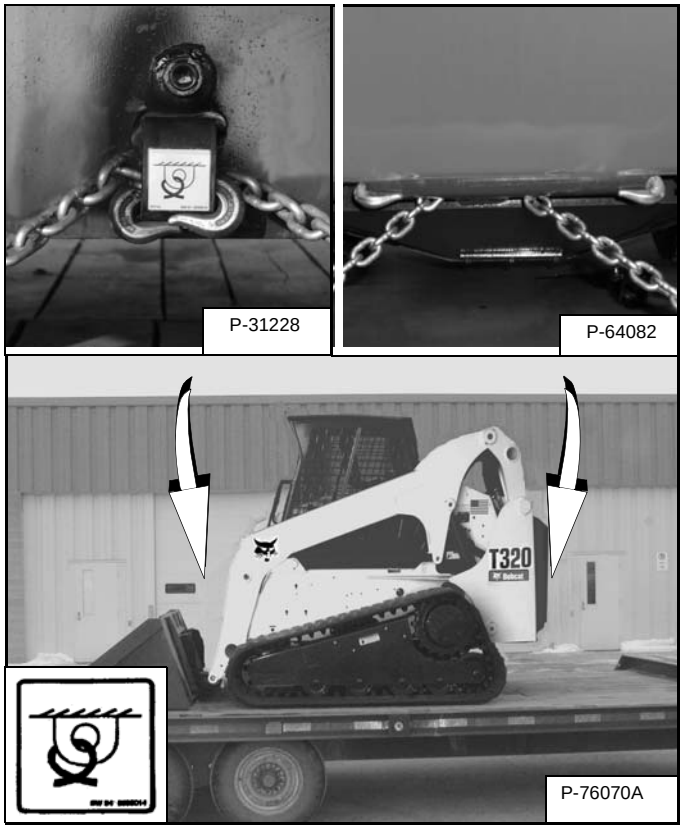


A loader with an empty bucket or no attachment must be loaded backward onto the transport vehicle **[Figure 10-40-1]**.

The rear of the trailer must be blocked or supported (Item 1) **[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]**.

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

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 tracks will not turn.) There might be slight wear to the tracks when the loader is skidded.
- The towing chain (or cable) must be rated at one and one-half times the weight of the loader. (See Performance on Page SPEC-10-4)

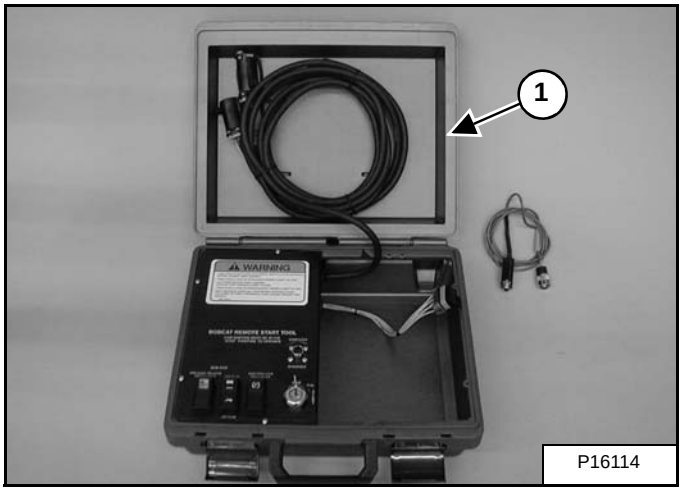
REMOTE START TOOL KIT-MEL1563

Remote Start Tool - MEL1563

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

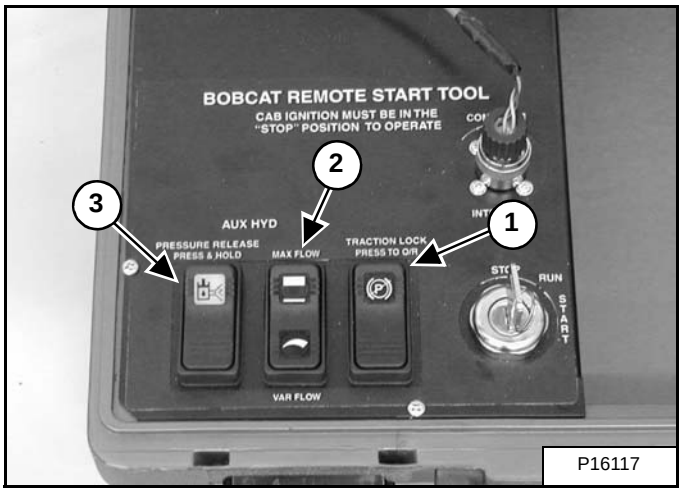
MEL1563 - Remote Start Tool
MEL1565 - Service Tool Harness Control
MEL1566 - Service Tool Harness Communicator (Computer Interface)

Figure 10-60-1



The remote start tool (Item 1) **[Figure 10-60-1]** is required when the service technician is checking 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 - MEL1563 (Cont'd)

Figure 10-60-3

Figure 10-60-4

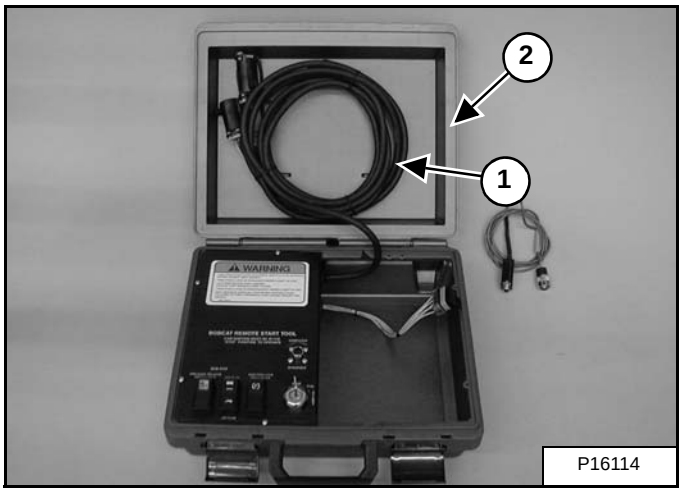
The 10-pin rectangular connector (Item 1) **[Figure 10-60-3]** is used to update software in the Deluxe Instrumentation Panel (Item 1) **[Figure 10-60-4]**.

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 10-60-3]**.

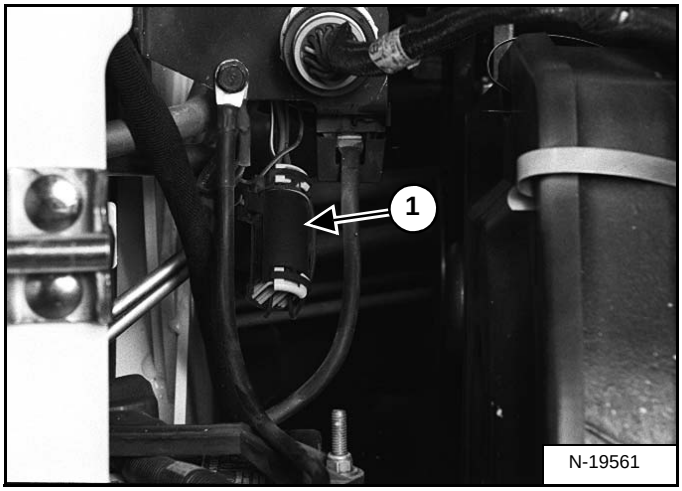
Service Tool Harness Control - MEL1565

Figure 10-60-5



The service tool harness control (Item 1) **[Figure 10-60-5]** 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

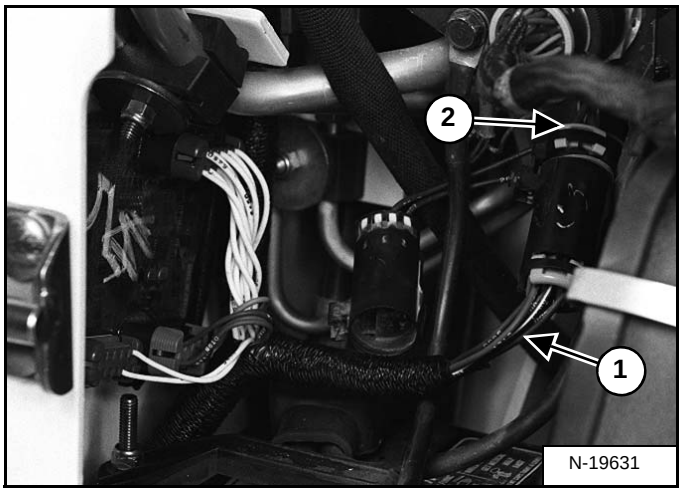


Remove the plug (Item 1) **[Figure 10-60-6]** from the loader harness connector.

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

Service Tool Harness Control - MEL1565 (Cont'd)

Figure 10-60-7



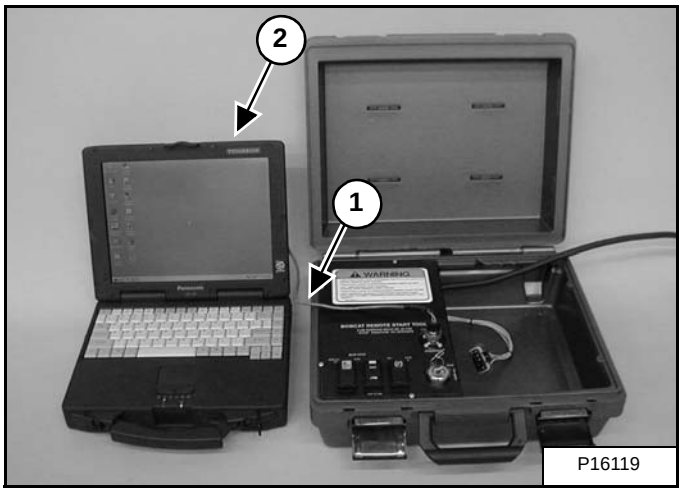
Loaders equipped with an attachment harness (Item 1) **[Figure 10-60-7]** must disconnect the attachment harness from the loader harness (Item 2) **[Figure 10-60-7]**.

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

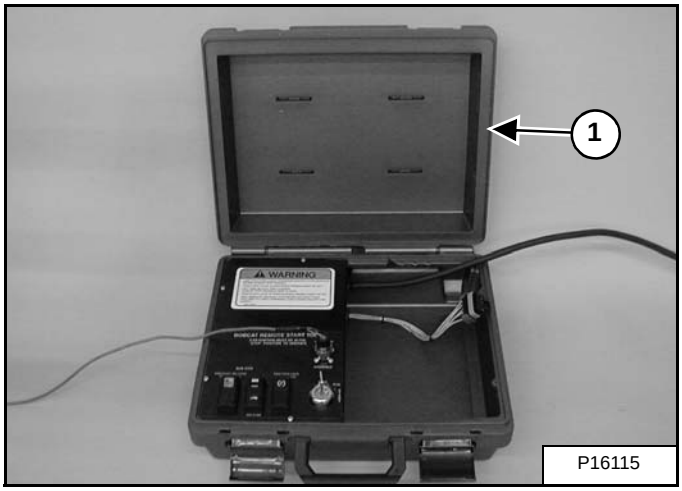
REMOTE START TOOL KIT-MEL1563 (CONT'D)

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

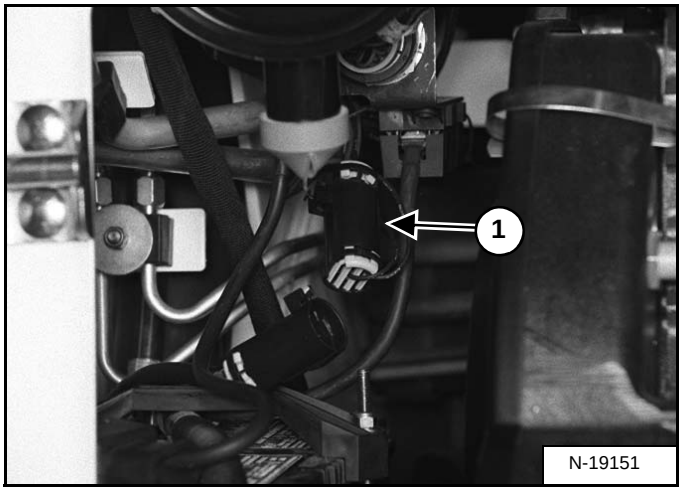
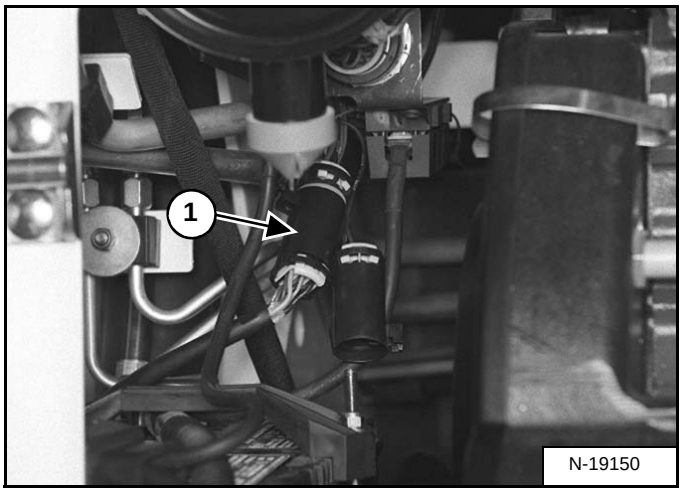
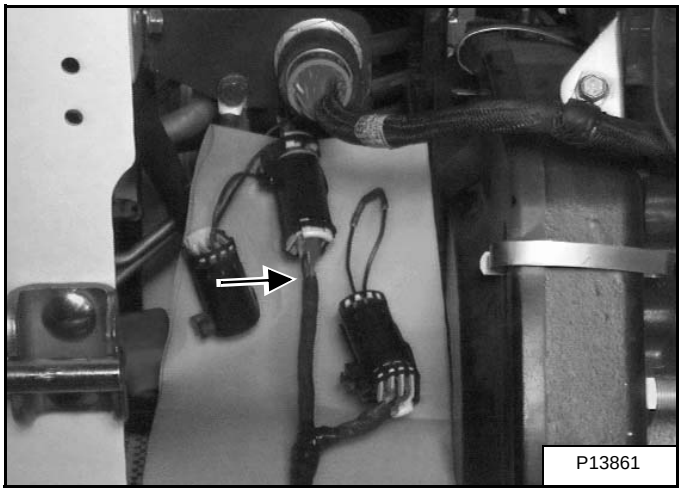


Figure 10-60-11



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

Figure 10-60-12



Connect the remote start tool to the engine 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

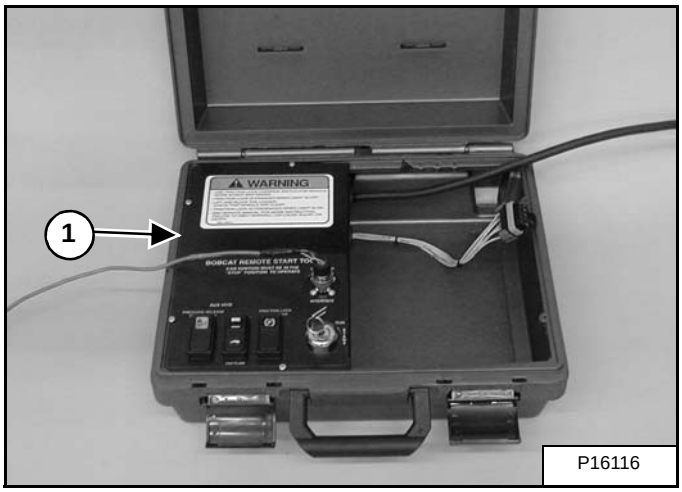
AVOID INJURY OR DEATH

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

W-2357-0899

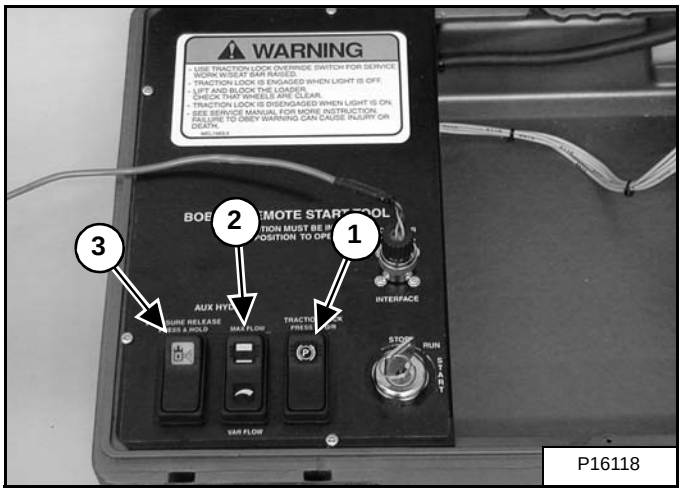
Remote Start Procedure (Cont'd)

Figure 10-60-13



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

Figure 10-60-14

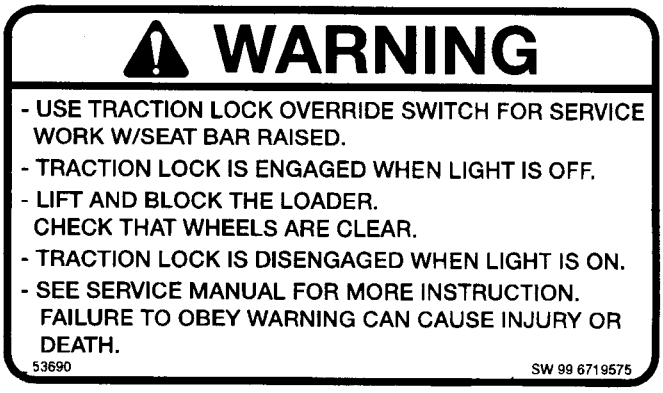


The traction lock switch (Item 1) **[Figure 10-60-14]** is used to turn traction lock on or off. Push the switch to the override position. The switch will illuminate to indicate traction lock OVERRIDE, in this position the wheels are able to turn.

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 three seconds.

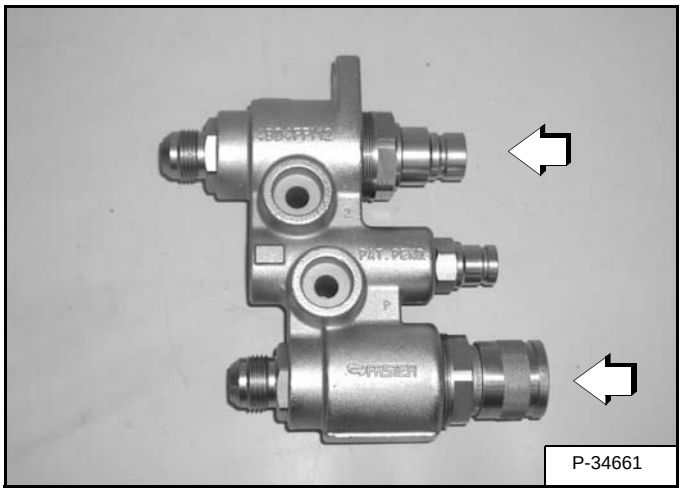
NOTE: With the engine running; pushing and holding the pressure release switch will cause the engine to stop in three seconds. To relieve the pressure; continue to press the switch after the engine has stopped.



Remote Start Procedure (Cont'd)

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

Figure 10-60-15



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

REMOTE START TOOL (SERVICE TOOL) KIT - 6689779

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 6689779, 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 6689779, 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 - 6689779 (CONT'D)

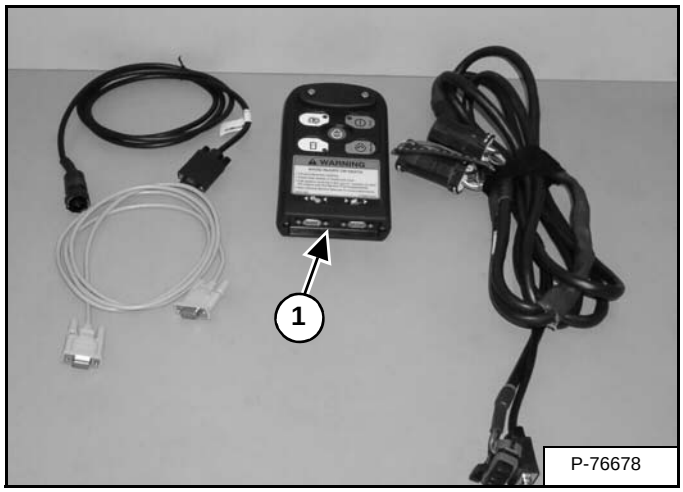
Remote Start Tool (Service Tool) - 6689778

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

Order from Bobcat Parts P/N: 6689779 - Remote Start Tool (Service Tool) Kit

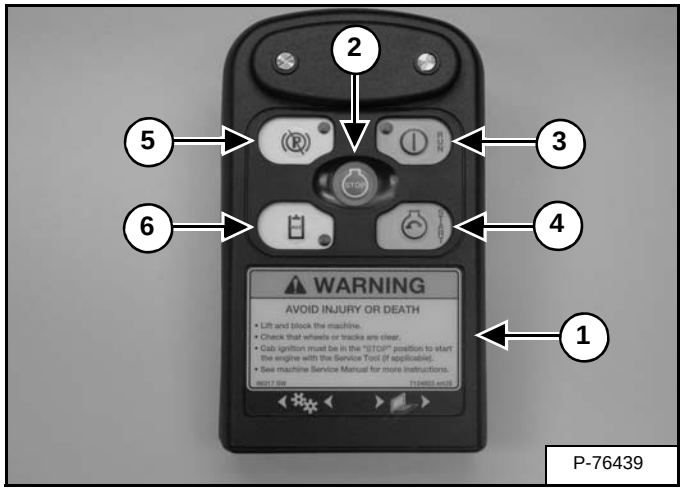
Kit Includes:
6689778 - Remote Start Tool (Service Tool)
6689747 - Loader Service Tool Harness
6689746 - Computer Service Tool Harness
6689745 - BOSS® Service Tool Harness

Figure 10-61-16



The remote start tool (Item 1) **[Figure 10-61-16]** is required when the service technician is checking the hydraulic / hydrostatic system or adjusting the steering linkage.

Figure 10-61-17



The Remote Start Tool (Service Tool) (Item 1) **[Figure 10-61-17]** has five buttons.

The STOP button (Item 2) **[Figure 10-61-17]** is used to stop the Remote Start Tool (Service Tool) from communicating and stop the loader engine.

The RUN button (Item 3) **[Figure 10-61-17]** 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 10-61-17]** is used to start the loader engine.

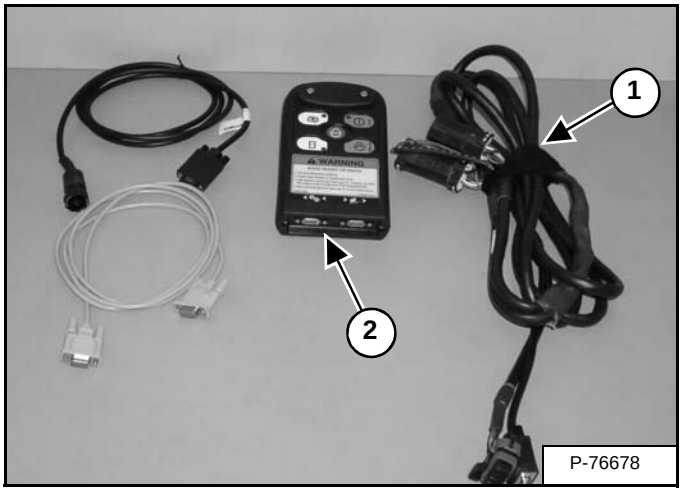
The traction lock button (Item 5) **[Figure 10-61-17]** is used to turn traction lock ON or OFF. Push the button and the button will illuminate indicating the traction lock is disabled in which the wheels or tracks are able to turn.

The auxiliary button (Item 6) **[Figure 10-61-17]** 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 - 6689779 (CONT'D)

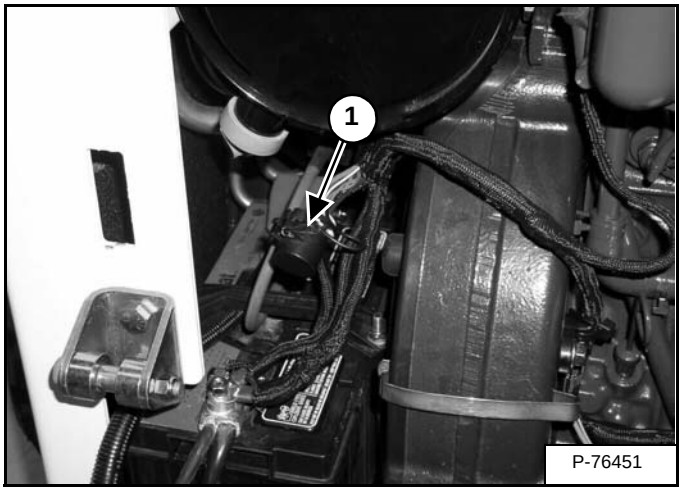
Loader Service Tool Harness - 6689747

Figure 10-61-18



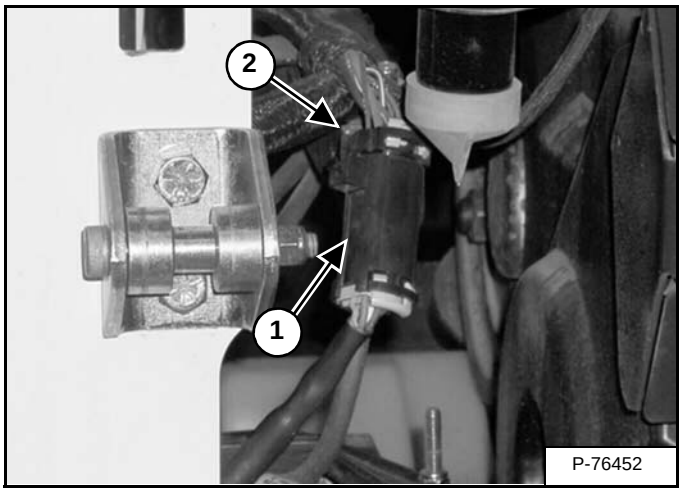
The loader service tool harness (Item 1) **[Figure 10-61-18]** is used to connect the remote start tool (service tool) (Item 2) **[Figure 10-61-18]** to the electrical system on the loader.

Figure 10-61-19



Loaders without an attachment control harness, remove the loader harness cap (Item 1) **[Figure 10-61-19]** and connect the Loader Service Tool Harness from the Remote Start Tool (Service Tool).

Figure 10-61-20



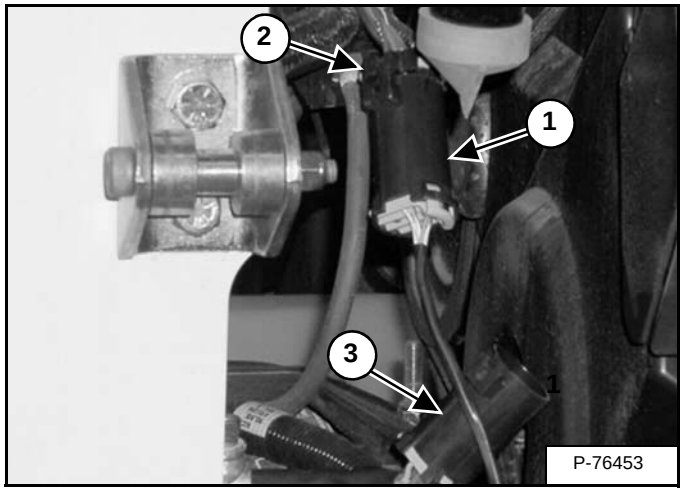
Loaders with an attachment control harness (7 pin or 14 pin), the attachment harness (Item 1) must be disconnected from the loader harness (Item 2) **[Figure 10-61-20]**.

When the remote start procedure is completed, replace the loader connector cap (Item 1) **[Figure 10-61-19]** or reconnect the attachment control harness to the loader harness **[Figure 10-61-20]**.

REMOTE START TOOL (SERVICE TOOL) KIT - 6689779 (CONT'D)

Loader Service Tool Harness - 6689747 (Cont'd)

Figure 10-61-21



NOTE: The Remote Start Tool (Service Tool) connection harness has two connectors (Item 1) and (Item 3). The main connector (Item 1) [Figure 10-61-21] is always used for connection to the loader harness.

The second connector (Item 3) [Figure 10-61-21] 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.

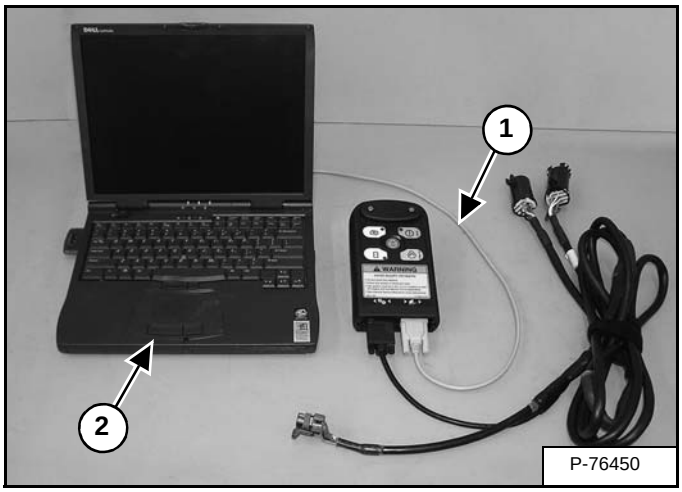
Connect the Remote Start Tool (Service Tool) connector (Item 1) to the loader harness connector (Item 2) and the other Remote Start Tool (Service Tool) connector to the ACD harness connector (Item 3) **[Figure 10-61-21]**.

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.

P-76454

Computer Service Tool Harness - 6689746

Figure 10-61-22



The computer service tool harness (Item 1) **[Figure 10-61-22]** is required to connect remote start tool (service tool) to the Service PC (Item 2) **[Figure 10-61-22]**.

REMOTE START TOOL (SERVICE TOOL) KIT - 6689779 (CONT'D)

Remote Start Procedure

⚠ WARNING

AVOID INJURY OR DEATH

With the 7-pin connector plugged into the loader and Remote Start Tool RUN button is not illuminated, the loader can still be started from the operator panel inside the cab.

Pressing the RUN button on the Remote Start Tool disconnects the operator panel from the start circuit. If the service technician will be working in the engine area it is important to remove the operator panel key or lock the keypad with a unique password.

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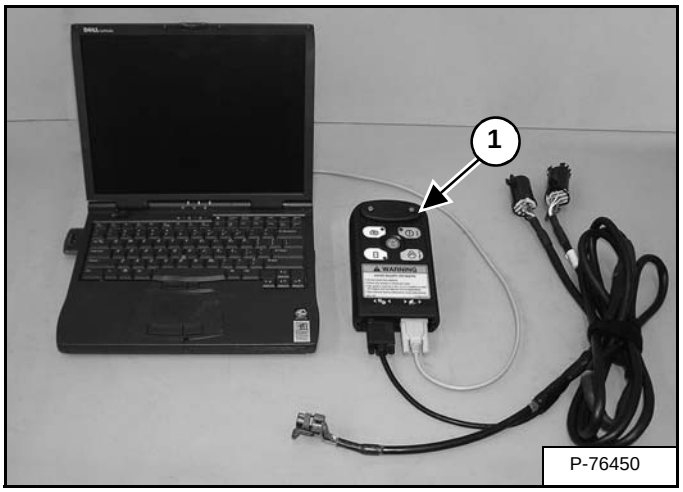
The tool listed will be needed to do the following procedure:

6689779: Remote Start Tool (Service Tool) Kit

Figure 10-61-23



The Remote Start Tool (Service Tool) (Item 1) **[Figure 10-61-23]** 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.

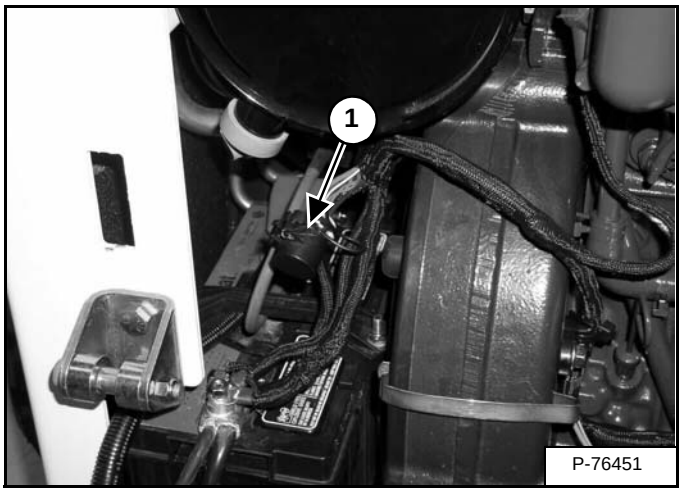
Lift and block the loader.

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).

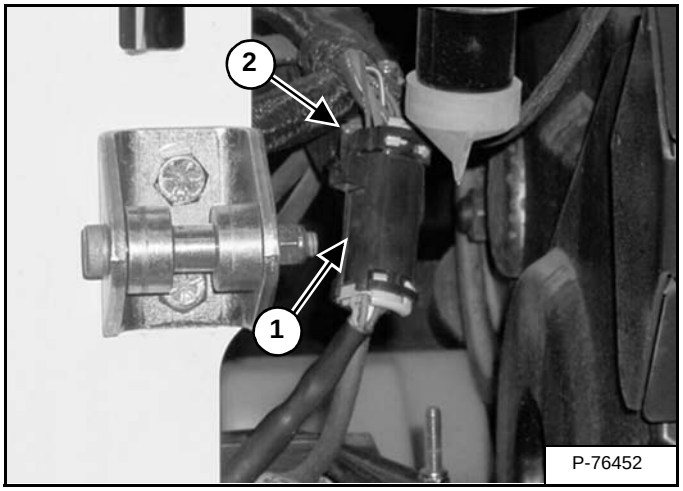
Open the rear door of the loader.

Figure 10-61-24



Loaders without an attachment control harness, remove the loader harness cap (Item 1) **[Figure 10-61-24]** and connect the Loader Service Tool Harness from the Remote Start Tool (Service Tool).

Figure 10-61-25



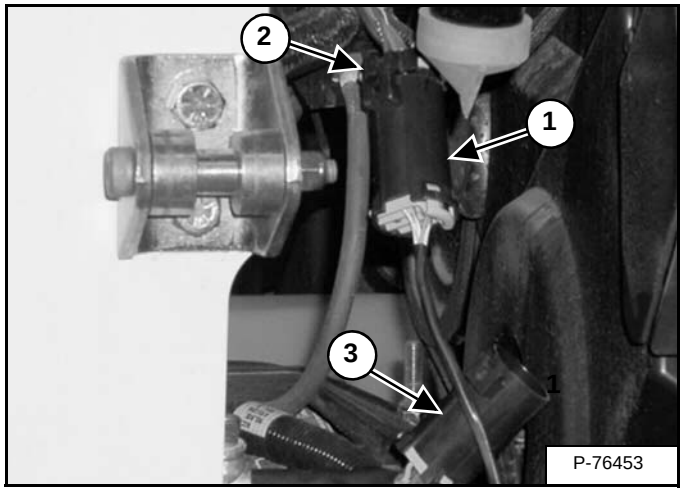
Loaders with an attachment control harness (7 pin or 14 pin), the attachment harness (Item 1) must be disconnected from the loader harness (Item 2) **[Figure 10-61-25]**.

When the remote start procedure is completed, replace the loader connector cap (Item 1) **[Figure 10-61-25]** or reconnect the attachment control harness to the loader harness **[Figure 10-61-25]**.

REMOTE START TOOL (SERVICE TOOL) KIT - 6689779 (CONT'D)

Remote Start Procedure (Cont'd)

Figure 10-61-26



NOTE: The Remote Start Tool (Service Tool) connection harness has two connectors (Item 1) and (Item 3). The main connector (Item 1) [Figure 10-61-26] is always used for connection to the loader harness.

The second connector (Item 3) [Figure 10-61-26] 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 10-61-26]**.

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.

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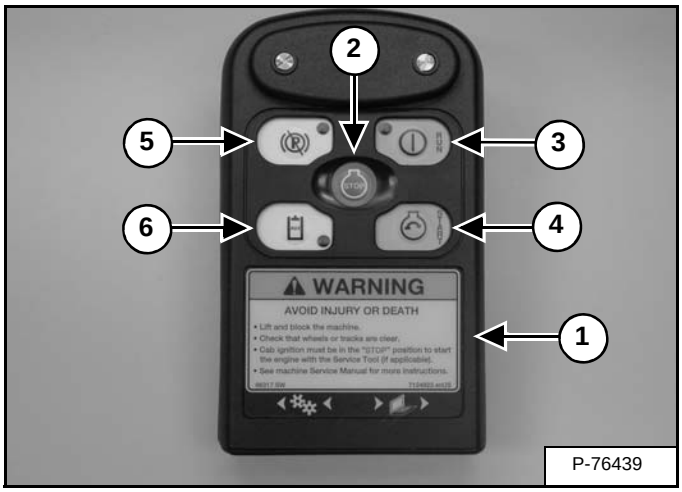
Figure 10-61-27



The Remote Start Tool (Service Tool) (Item 1) **[Figure 10-61-27]** has five buttons.

The STOP button (Item 2) **[Figure 10-61-27]** is used to stop the Remote Start Tool (Service Tool) from communicating and stop the loader engine.

The RUN button (Item 3) **[Figure 10-61-27]** 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.

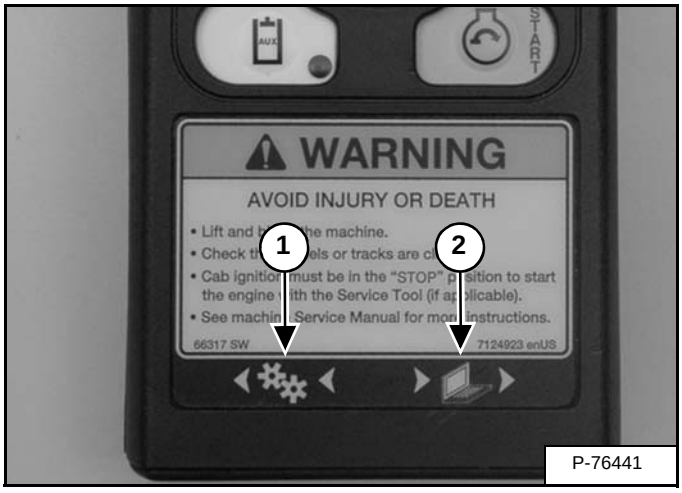
The START button (Item 4) **[Figure 10-61-27]** is used to start the loader engine.

The traction lock button (Item 5) **[Figure 10-61-27]** 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 10-61-27]** 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 Procedure (Cont'd)

Figure 10-61-28

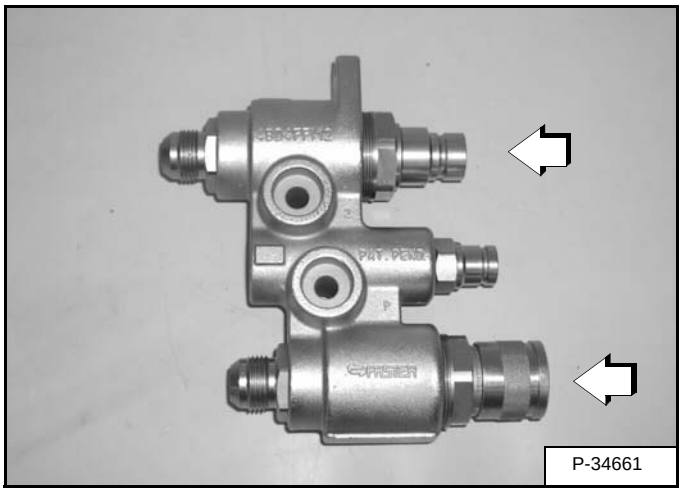


The gear icon with the left facing arrows (Item 1) **[Figure 10-61-28]** will illuminate and blink when the RUN key is pressed and the loader is communicating with the service tool.

The computer icon with the right facing arrows (Item 2) **[Figure 10-61-28]** 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 on the center console to the right and left several times.

Figure 10-61-29



Push the couplers on the front auxiliary block toward the block and hold for five seconds to release the front auxiliary pressure **[Figure 10-61-29]**.

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-2003-0903

SERVICE SCHEDULE		HOURS					
ITEM	**SERVICE REQUIRED**	**8-10**	**50**	**100**	**■ 250**	**■ 500**	**■ 1000**
Engine Oil	Check the oil level and add as needed. Do not overfill.						
Engine Air Filter and Air System	Check display panel. Service only when required. Check for leaks and damaged components.						
Engine Cooling System	Clean debris from oil cooler, radiator and grill. 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 multi-purpose lithium based grease.						
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.						
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 and A/C 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.						
Tracks	Check for damaged or worn tracks and correct tension.	❑					
Track Sprocket Nuts	Check torque. Tighten as needed. See procedure in this manual.						
Parking Brake, Foot Pedals, Hand Controls and Steering Levers or Joysticks	Check for correct operation. Repair or adjust as needed.						
Spark Arrestor 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.		▲				
Drive Belts (Alternator, air conditioning, 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.		▲	✶			
Hydraulic / Hydrostatic Filter, Charge Filter, Reservoir Breather	Replace the hydraulic / hydrostatic filter, charge filter, and the reservoir breather.		●				
Hydrostatic Motor Carrier	Replace oil with high performance synthetic oil P/N 6682546.						
Hydraulic Reservoir	Replace the fluid.						
Case Drain Filters	Replace the filters.		▲				
Engine Valves	Adjust the engine valves.					❍	
Coolant	Replace the coolant	Every 2 years					

■ **Or every 12 months.**

▲ **Perform at first 50 hours, then as scheduled.**

❑ **Check every 8 - 10 hours for the first 24 hours, then at 50 hour intervals.**

● **Replace the hydraulic / hydrostatic filter element after the first 50 hours, then when service code [M0217] is displayed or as scheduled.**

✶ **Change oil and filter every 100 hours when operating under severe conditions.**

❍ **Perform at first 500 hours, then as scheduled.**

AIR CLEANER SERVICE

Replacing Filter Elements

Figure 10-80-1

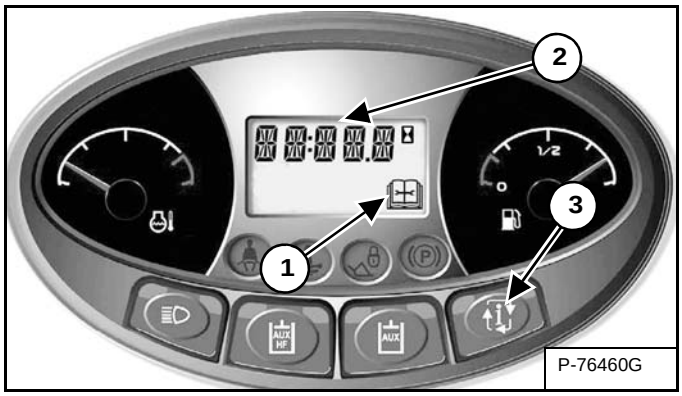
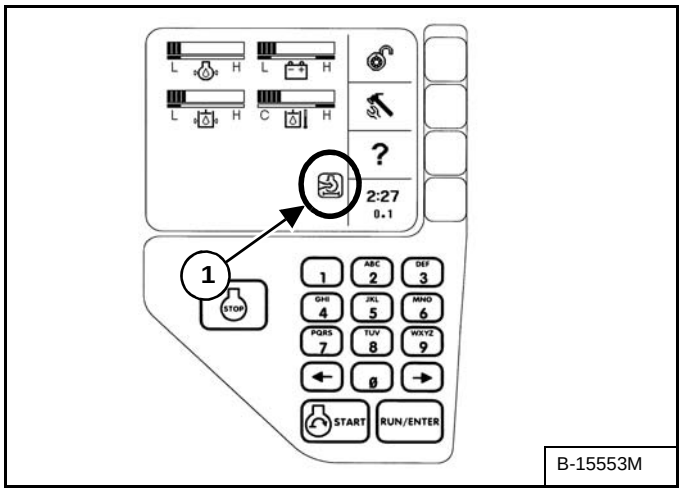


Figure 10-80-2



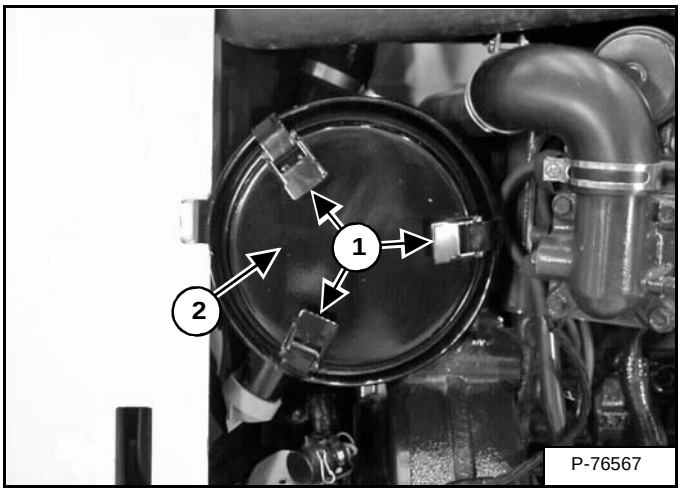
It is important to change the air filter element only when necessary. The Service indicator (Item 1) will FLASH and service code **[M0117]** (Air Filter Plugged) will show in the Data Display (Item 2) when the Information button (Item 3) **[Figure 10-80-1]** is held for two seconds.

The Air Cleaner icon on the Deluxe Instrumentation Panel, if equipped, will be ON (Item 1) **[Figure 10-80-2]**.

Replace the inner filter every third time the outer filter is replaced or as indicated.

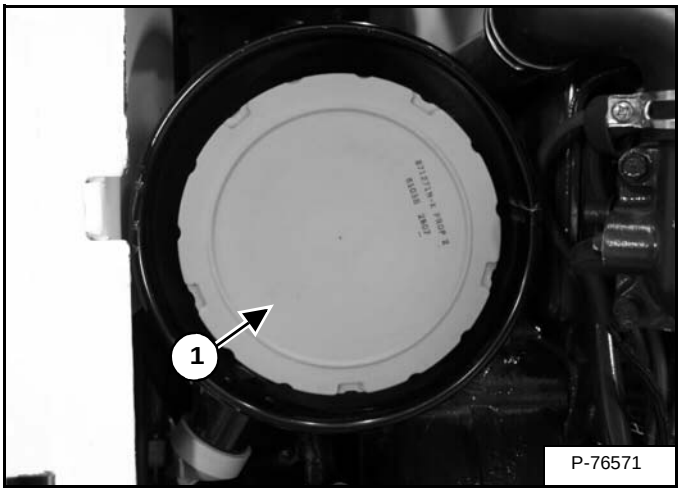
Outer Filter

Figure 10-80-3



Open the latches (Item 1) and remove the dust cover (Item 2) **[Figure 10-80-3]**.

Figure 10-80-4



Pull the outer filter element (Item 1) **[Figure 10-80-4]** out and discard.

NOTE: Make sure all sealing surfaces are free of dirt and debris.

Install new filter element. Push all the way in until it contacts the base of the housing.

Install the dust cover and secure the latches **[Figure 10-80-3]**.

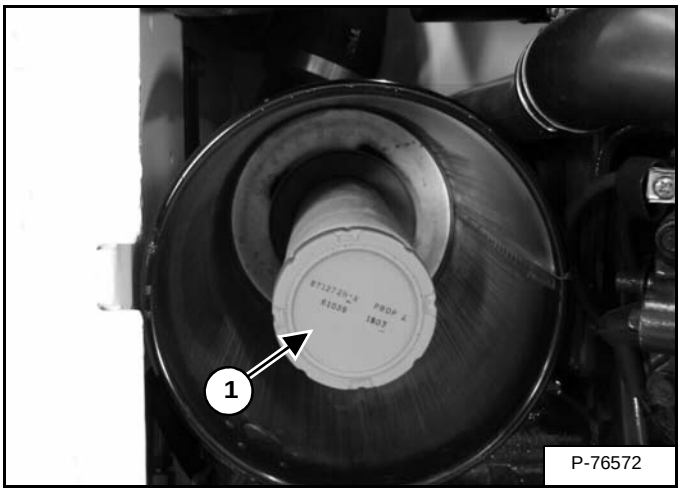
Replacing Filter Elements (Cont'd)

Inner Filter

Only replace the inner filter element under the following conditions:

- Replace the inner filter element every *third* time the outer filter is replaced.
- After the outer element has been replaced, start the engine and run at full RPM. If the HOURMETER / CODE DISPLAY shows **[M0117]** (Air Filter Plugged), replace the inner filter element.

Figure 10-80-5



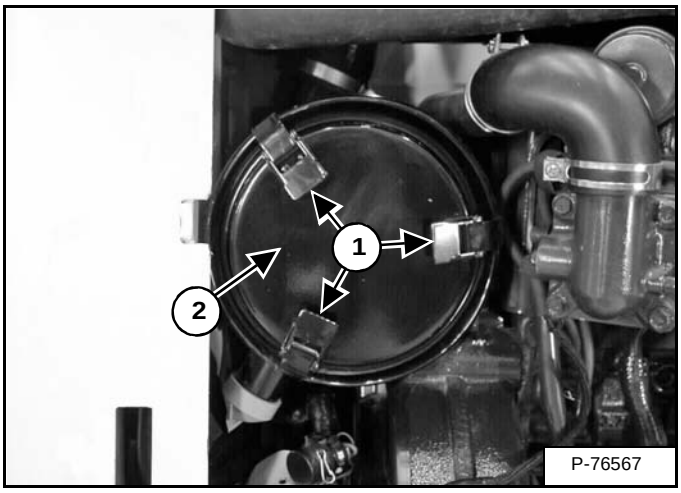
Remove the wing nut and pull the inner filter element (Item 1) **[Figure 10-80-5]** out and discard.

NOTE: Make sure all sealing surfaces are free of dirt and debris.

Install the new inner element (Item 1) **[Figure 10-80-5]**.

Install the outer element.

Figure 10-80-6



Install the dust cover (Item 2) and secure the latches (Item 1) **[Figure 10-80-6]**.

ENGINE COOLING SYSTEM

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

⚠ 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.**

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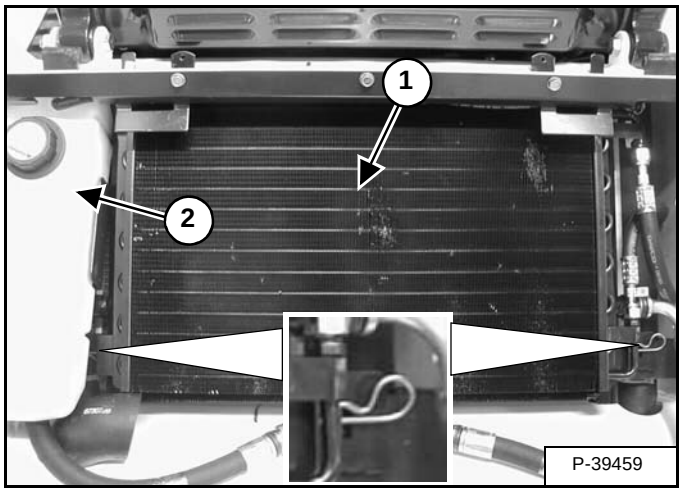
Cleaning

Open the rear door.

Remove the rear grill. (See Removal And Installation on Page 50-60-1.)

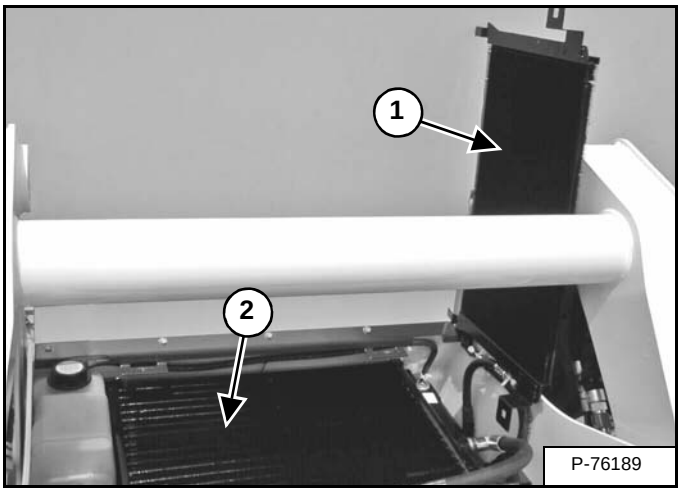
Figure 10-90-1



Use low air pressure or water pressure to clean the top of the air conditioning condenser (Item 1) **[Figure 10-90-1]**, if equipped.

Raise the overflow tank (Item 2) slightly and remove the two fasteners (Inset) **[Figure 10-90-1]**.

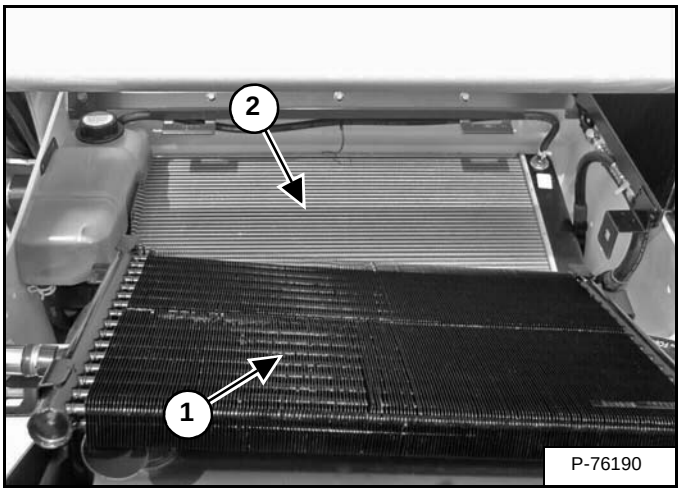
Figure 10-90-2



NOTE: Be careful when raising and lowering the air conditioning condenser so that the air conditioning condenser does not fall on the oil cooler and damage the fins.

Raise the air conditioning condenser (Item 1) and use low air pressure or water pressure to clean the top of the oil cooler (Item 2) **[Figure 10-90-2]**.

Figure 10-90-3



NOTE: Be careful when raising and lowering the oil cooler so that the oil cooler does not fall on the radiator and damage the fins.

Raise the oil cooler (Item 1) and use low air pressure or water pressure to clean the top of the radiator (Item 2) **[Figure 10-90-3]**.

Lower the oil cooler.

Lower the air conditioning condenser, if equipped.

Install the fasteners and lower the overflow tank. Check the cooling system for leaks.

Install the rear grill and close the rear door.

Checking Level

Open the rear door and raise the rear grill.

Check coolant level using the level markers (Item 3) **[Figure 10-90-5]** 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.

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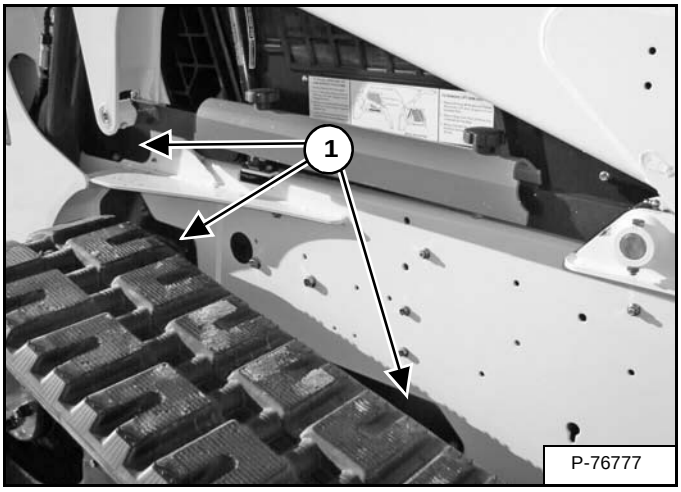
Figure 10-90-4

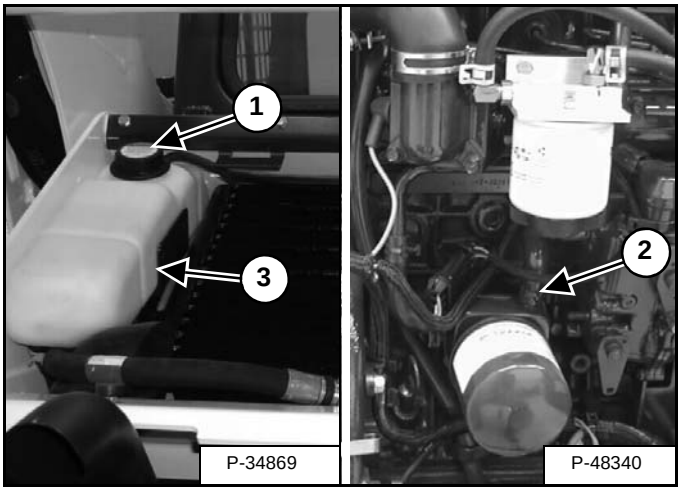


NOTE: All access covers (Item 1) [Figure 10-90-4] (both sides) must be in place to ensure correct air flow through the oil cooler which will ensure cooling for engine and hydraulic system.

Removing And Replacing Coolant

Open the rear door and remove the rear grill.

Figure 10-90-5



Remove the coolant fill cap (Item 1) **[Figure 10-90-5]**.

Disconnect the hose from the engine block to the oil filter cooler (Item 2) **[Figure 10-90-5]**. Drain the coolant into a container. Recycle or dispose of coolant in an environmentally safe manner.

Mix new coolant in a separate container. (See Capacities on Page SPEC-10-6.)

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.)

One gallon and one pint (4,3 L) of propylene glycol mixed with one gallon (3,8 L) of water is the correct mixture of coolant to provide a -34°F (-37°C) freeze protection.

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 replace 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.

Install the rear grill and close the rear door.

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

The following fuels may be used in this machine:

- Low Sulfur (500 ppm sulfur) Diesel Fuel.
- 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 may result in premature failure of fuel system components, such as plugged fuel filters and deteriorated fuel lines.
- Shorter maintenance intervals may 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 vehicle 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.

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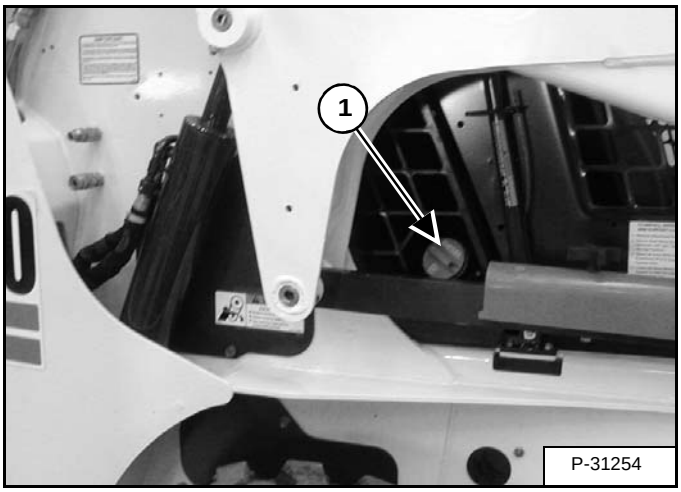
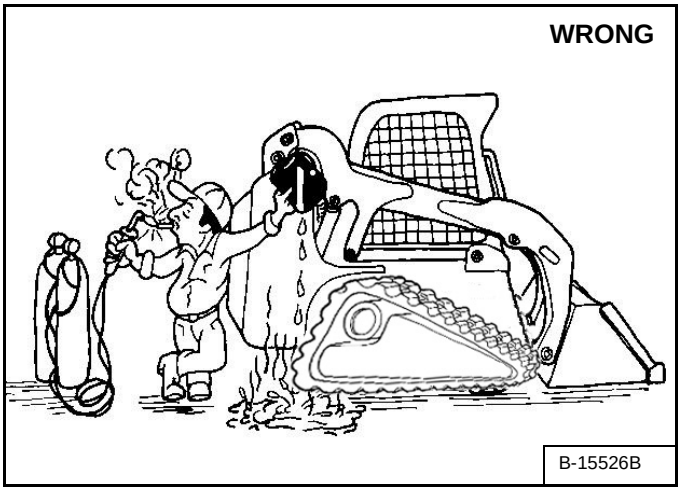
Figure 10-100-1



Remove the 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]**.

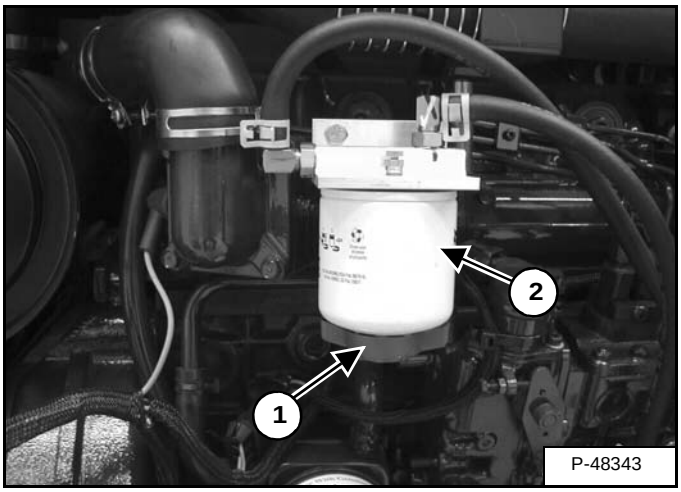
Install and tighten the fuel cap (Item 1) **[Figure 10-100-1]**.

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 physician familiar with this injury.

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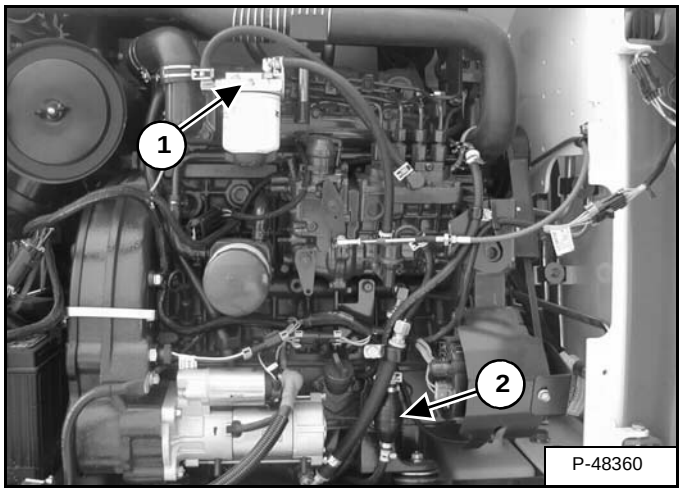
Figure 10-100-4



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 fuel flows from the vent with no air bubbles.

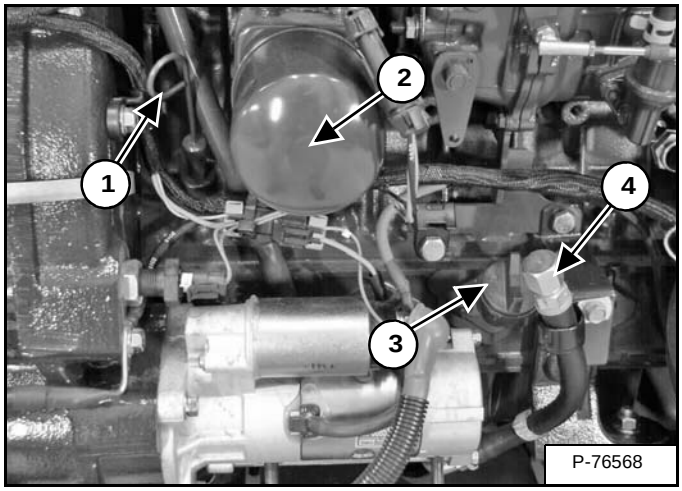
Close the vent (Item 1) **[Figure 10-100-4]**.

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

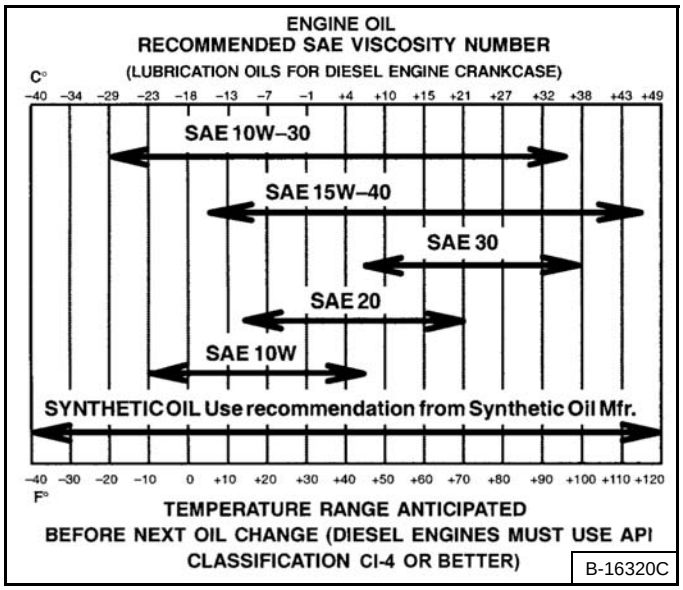


Park the machine on level ground. Open the rear door and remove the dipstick (Item 1) **[Figure 10-110-1]**.

Keep the oil level between the marks on the dipstick. Do not overfill.

Engine Oil Chart

Figure 10-110-2



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

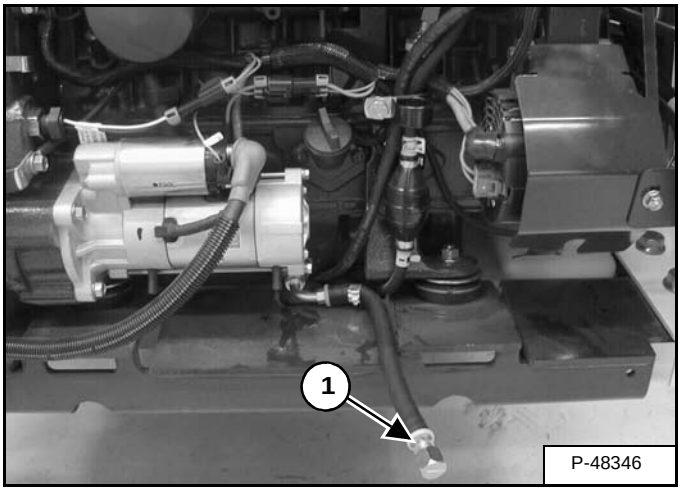
Removing And Replacing Oil And Filter

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 from its storage position (Item 4) **[Figure 10-110-1]**.

Figure 10-110-3



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

Install the oil drain cap and return the drain hose to its storage position.

Remove the oil filter (Item 2) **[Figure 10-110-1]** and clean the filter housing surface.

Use genuine Bobcat filter only.

Put oil on the new filter gasket, install the filter and hand tighten.

Install and tighten the drain plug.

Remove the fill cap (Item 3) **[Figure 10-110-1]**. Put oil in the engine. For the correct quantity (See Capacities on Page SPEC-10-6) 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.

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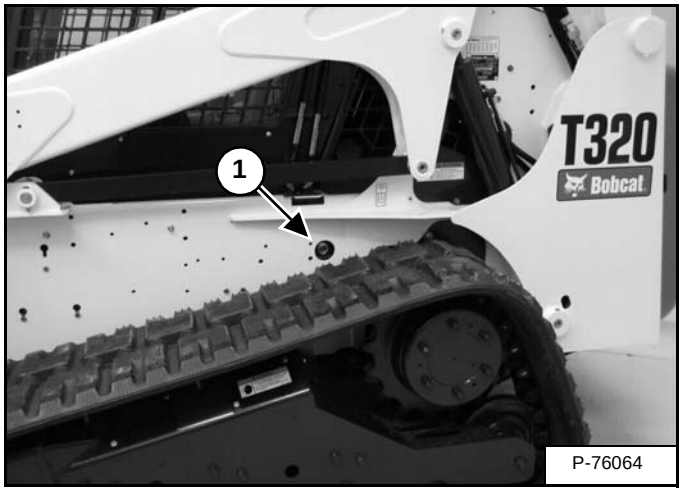
HYDRAULIC / HYDROSTATIC SYSTEM

Checking And Adding Fluid

Put the loader on a level surface, lower the lift arms and tilt the Bob-Tach fully back.

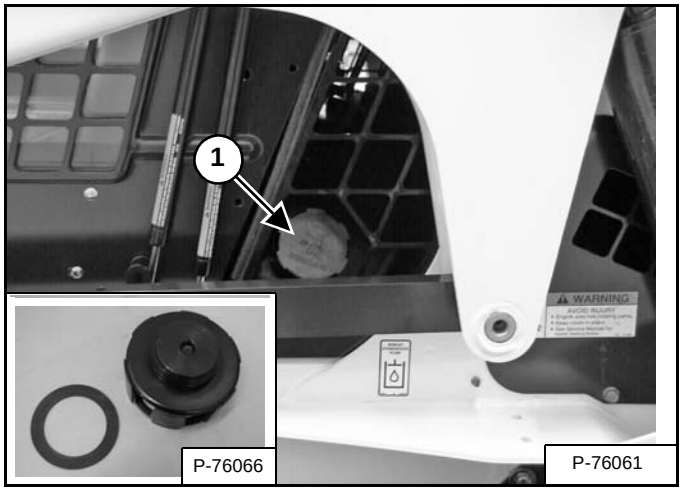
Stop the engine.

Figure 10-120-1



Check the fluid level in sight gauge (Item 1) **[Figure 10-120-1]**.

Figure 10-120-2



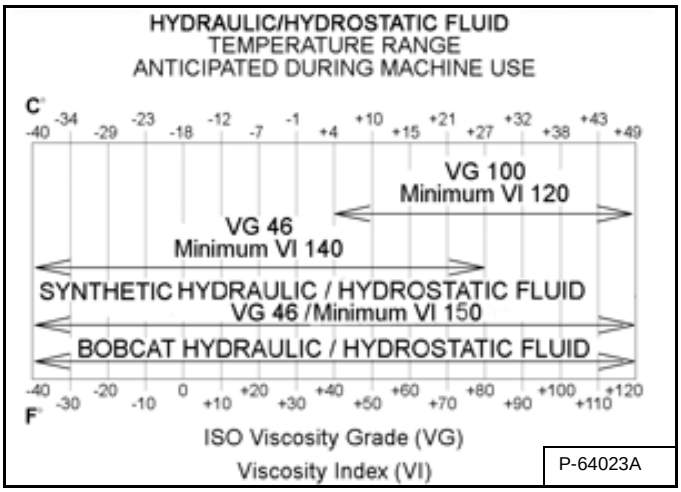
Remove the fill cap (Item 1) **[Figure 10-120-2]**.

Add fluid **[Figure 10-120-3]** as needed to bring the level to the center of the sight gauge.

NOTE: Before installing the fill cap, make sure the rubber gasket is installed on fill cap (Inset) [Figure 10-120-2].

Hydraulic / Hydrostatic Fluid Chart

Figure 10-120-3



Use only recommended fluid in the hydraulic system **[Figure 10-120-3]**. (See Hydraulic System on Page SPEC-10-5).

Removing And Replacing Hydraulic Fluid

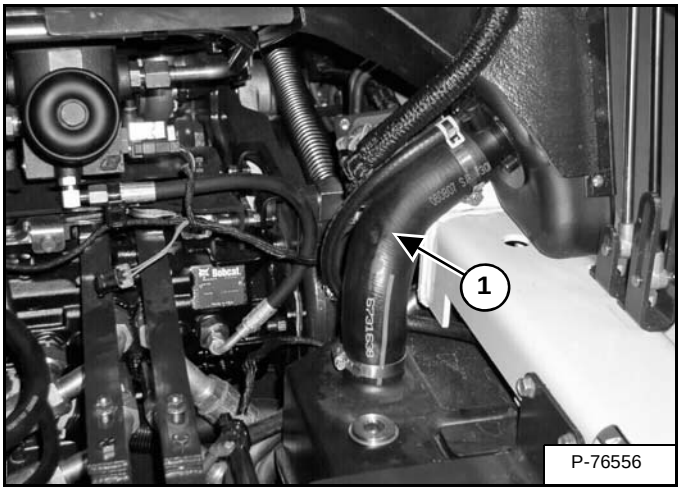
For the correct service interval (See SERVICE SCHEDULE on Page 10-70-1.)

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)

Remove the fill cap and raise the operator cab. (See Raising on Page 10-30-1.)

Figure 10-120-4



Remove the two hose clamps and remove the hose (Item 1) **[Figure 10-120-4]**.

⚠ 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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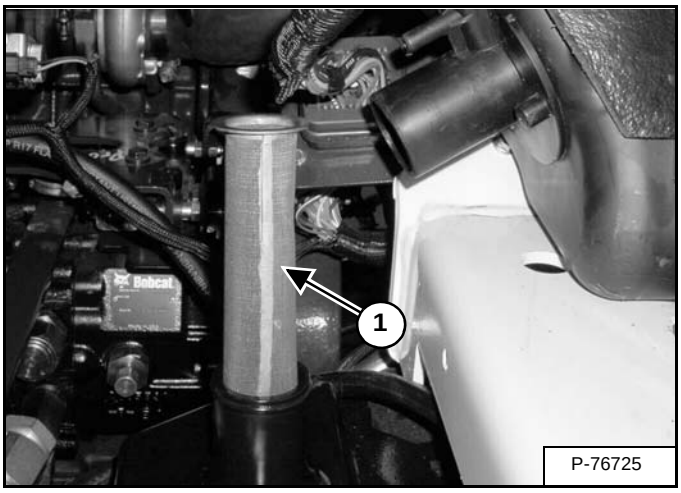
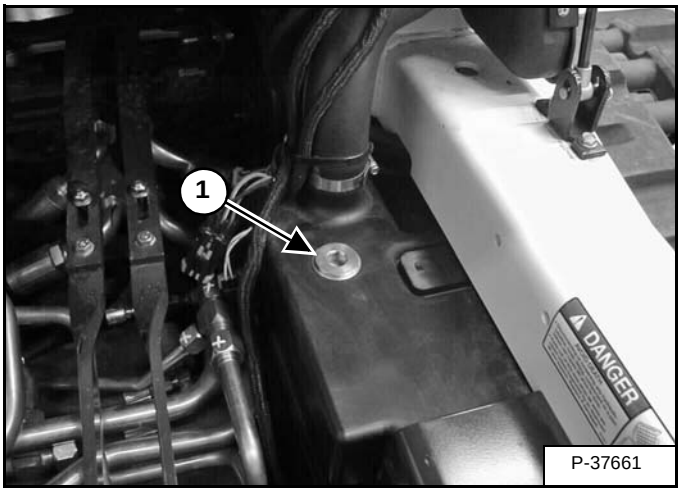
Figure 10-120-5



Remove and clean the hydraulic fill screen (Item 1) **[Figure 10-120-5]**. Use low air pressure to dry the screen.

Install screen, hose, and hose clamps.

Figure 10-120-6



Remove the plug (Item 1) **[Figure 10-120-6]** and remove the fluid.

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

Install the plug (Item 1) **[Figure 10-120-6]**.

Lower the operator cab. (See Lowering on Page 10-30-3.)

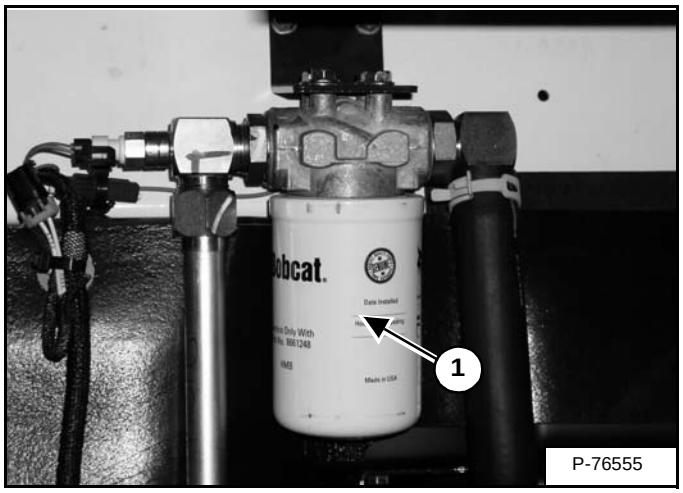
Add the correct fluid to the reservoir until the fluid level is at the center of the sight gauge. (See Checking And Adding Fluid on Page 10-120-1)

Removing And Replacing Hydraulic / Hydrostatic Filter

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 10-120-7



Remove the filter (Item 1) **[Figure 10-120-7]**.

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

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

⚠ 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 physician familiar with this injury.

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Lower the operator cab. (See Lowering on Page 10-30-3.)

Start the engine and operate the loader hydraulic controls.

Stop the engine and check for leaks at the filter.

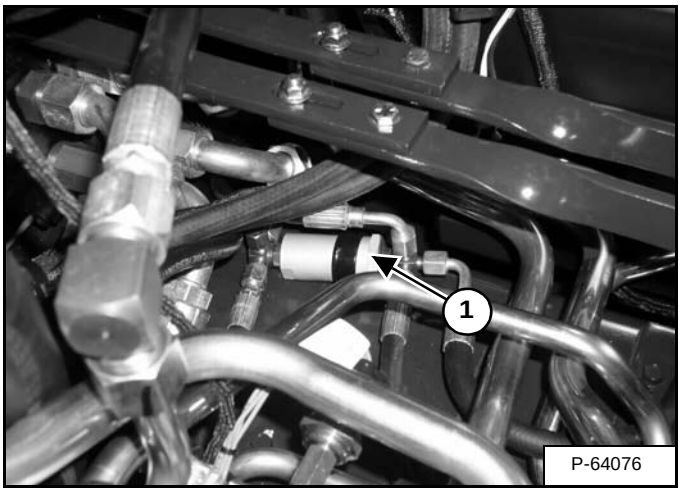
Check the fluid level in the reservoir and add as needed. (See Checking And Adding Fluid on Page 10-120-1.)

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.)

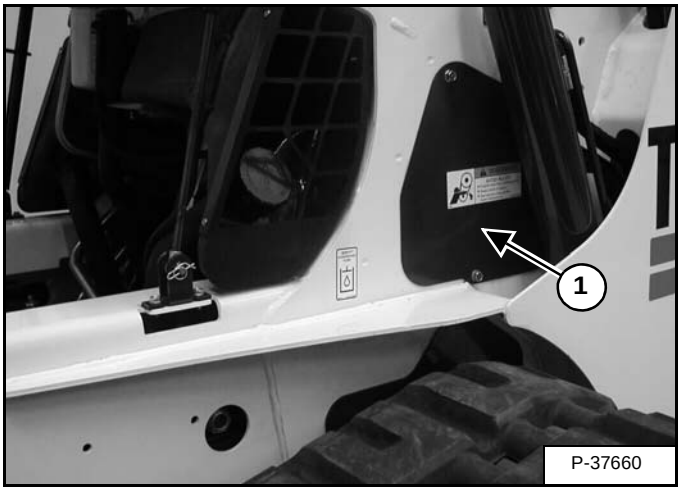
Figure 10-120-8



Disconnect the hoses and fittings from the hydrostatic motor case drain filter (Item 1) **[Figure 10-120-8]**. Remove the mounting clamp and discard the filter.

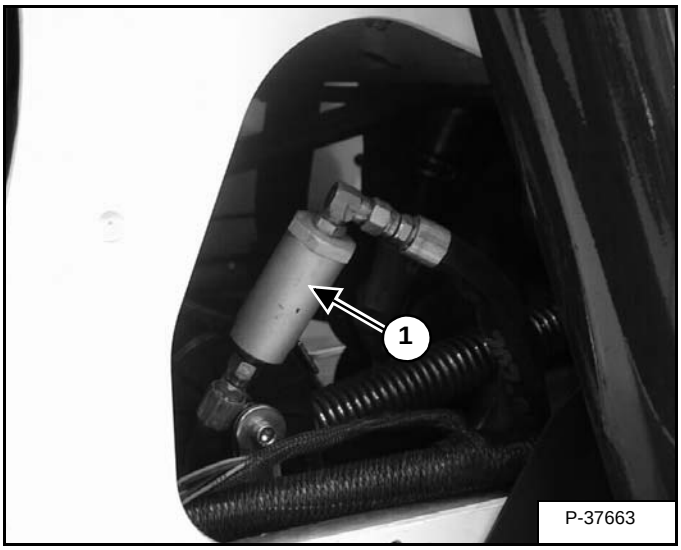
Install fittings on new filter, install new filter, install the mounting clamp, connect and tighten the hoses.

Figure 10-120-9



Remove the left side access panel (Item 1) **[Figure 10-120-9]**.

Figure 10-120-10



Pull the attachment case drain filter (Item 1) **[Figure 10-120-10]** up to the access opening.

Disconnect the hoses and fittings from the filter (Item 1) **[Figure 10-120-10]**. Remove and discard the filter.

Install new filter, tighten the hoses and fittings and push the filter down into the engine compartment. Install the access cover.

⚠ 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 10-30-3.)

Start the engine and operate the loader hydraulic controls.

Stop the engine and check for leaks at the filters.

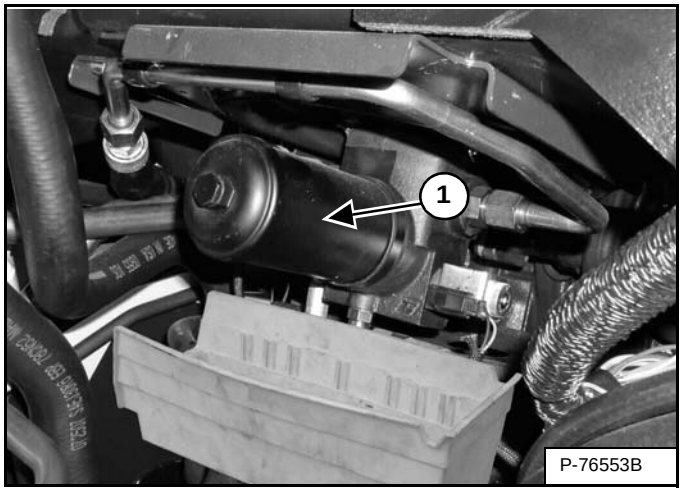
Check the fluid level in the reservoir and add as needed. (See Checking And Adding Fluid on Page 10-120-1.)

Removing And Replacing Hydraulic Charge Filter

The hydraulic charge filter is located under the cab. For the correct service interval (See SERVICE SCHEDULE on Page 10-70-1.)

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

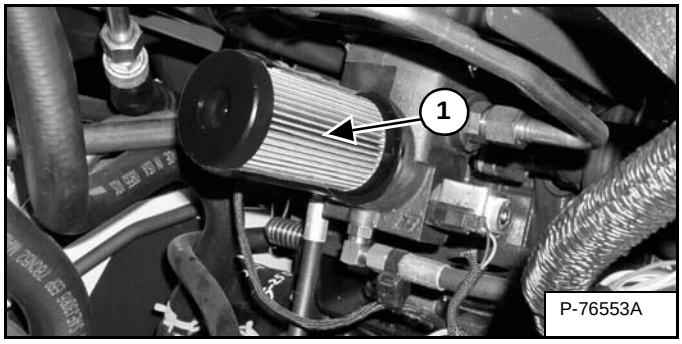
Figure 10-120-11



Place a suitable container below the filter housing and remove the filter housing (Item 1) **[Figure 10-120-11]**.

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

Figure 10-120-12



Remove and discard the filter element (Item 1) **[Figure 10-120-12]**.

Clean the surface of the filter housing and the filter base where they contact the filter element seal.

Put clean oil on the seal of the new filter element. Install the element on the filter base. Install and tighten the filter housing to 35-40 ft.-lb. (47-54 N•m) torque.

Lower the operator cab. (See Lowering on Page 10-30-3.)

⚠ 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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⚠ 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 physician familiar with this injury.

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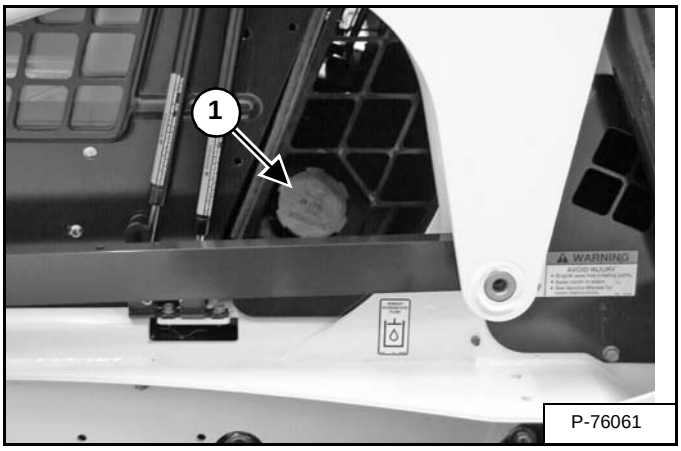
Stop the engine and check for leaks at the filter.

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

Breather Cap

See the SERVICE SCHEDULE for the correct replacement interval. (See SERVICE SCHEDULE on Page 10-70-1.)

Figure 10-120-13



Remove the breather cap (Item 1) **[Figure 10-120-13]** and discard.

Install new breather cap.

WARNING

AVOID INJURY OR DEATH

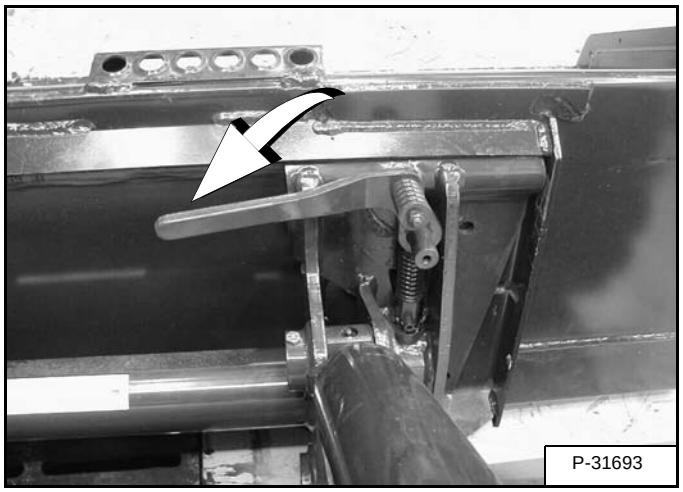
Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire.

W-2103-0508

BOB-TACH (HAND LEVER)

Inspection And Maintenance

Figure 10-130-1



Move the Bob-Tach levers down to engage the wedges **[Figure 10-130-1]**.

The levers and wedges must move freely.

⚠ WARNING

Bob-Tach wedges must extend through the holes in attachment. Lever(s) must be fully down and locked. Failure to secure wedges can allow attachment to come off and cause injury or death.

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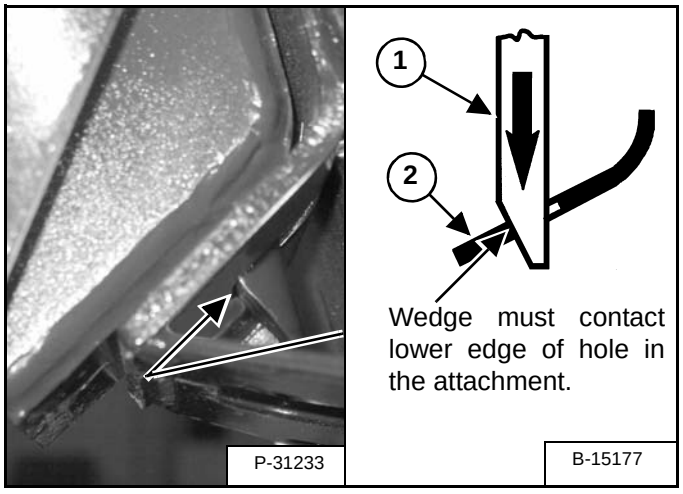
Figure 10-130-2

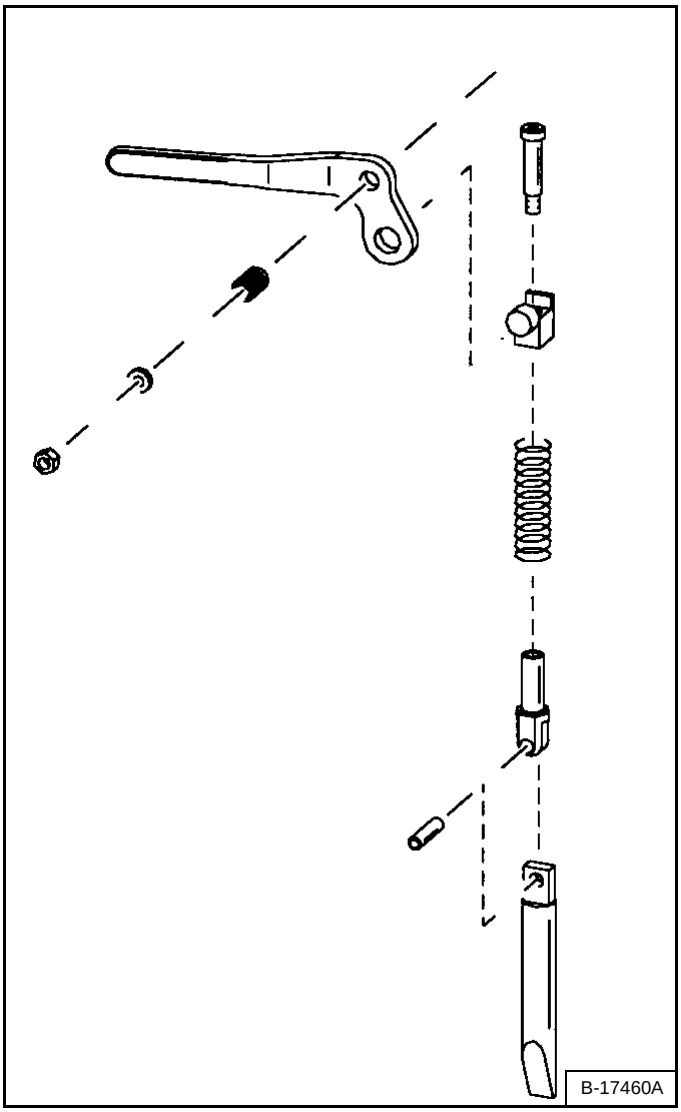


The wedges (Item 1) **[Figure 10-130-2]** must extend through the holes in the attachment mounting frame.

The spring loaded wedge (Item 1) must contact the lower edge of the hole in the attachment (Item 2) **[Figure 10-130-2]**.

If the wedge does not contact the lower edge of the hole **[Figure 10-130-2]**, the attachment will be loose and can come off the Bob-Tach.

Figure 10-130-3



Inspect the mounting frame on the attachment and Bob-Tach, linkages and wedges for excessive wear or damage **[Figure 10-130-3]**. 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.

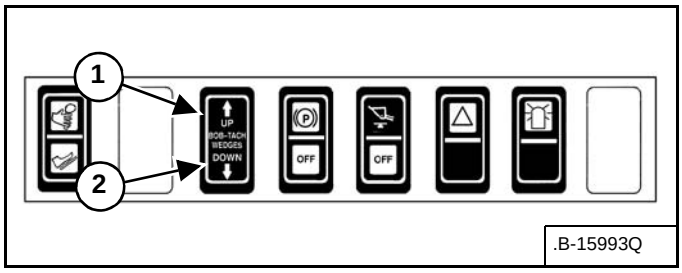
Lubricate the wedges. (See SERVICE SCHEDULE on Page 10-70-1) (See LUBRICATING THE LOADER on Page 10-140-1.)

BOB-TACH (POWER)

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

Inspection And Maintenance

Figure 10-131-1



Push and hold the BOB-TACH “WEDGES UP” switch **[Figure 10-131-1]** until wedges are fully raised. Push and hold the BOB-TACH “WEDGES DOWN” switch **[Figure 10-131-1]** until the wedges are fully down.

The levers and wedges must move freely.

⚠ WARNING

Bob-Tach wedges must extend through the holes in attachment. Lever(s) must be fully down and locked. Failure to secure wedges can allow attachment to come off and cause injury or death.

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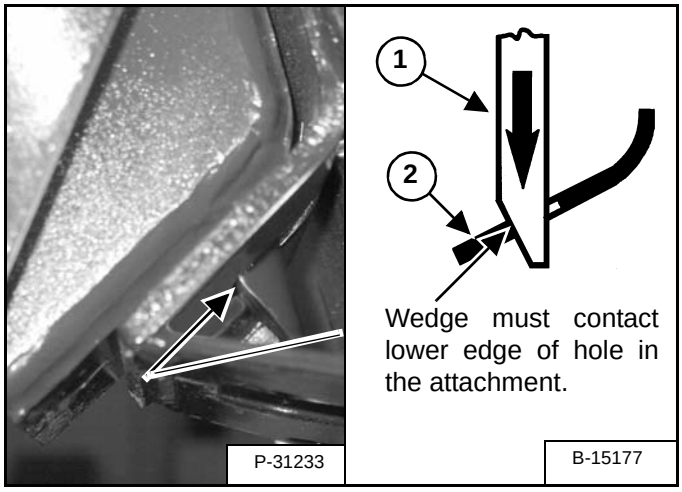
Figure 10-131-2

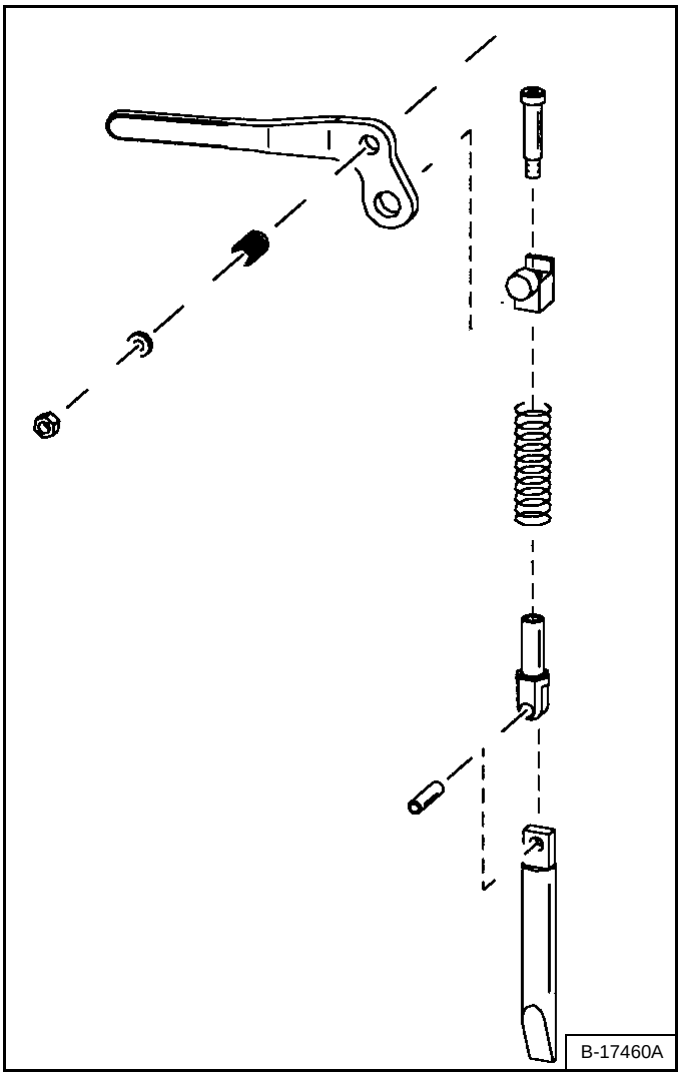


The wedges (Item 1) **[Figure 10-131-2]** must extend through the holes in the attachment mounting frame.

The spring loaded wedge (Item 1) must contact the lower edge of the hole in the attachment (Item 2) **[Figure 10-131-2]**.

If the wedge does not contact the lower edge of the hole **[Figure 10-131-2]**, the attachment will be loose and can come off the Bob-Tach.

Figure 10-131-3



Inspect the mounting frame on the attachment and the Bob-Tach, linkages and wedges for excessive wear or damage **[Figure 10-131-3]**. 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.) (See LUBRICATING THE LOADER on Page 10-140-1.)

LUBRICATING THE LOADER

Lubrication Locations

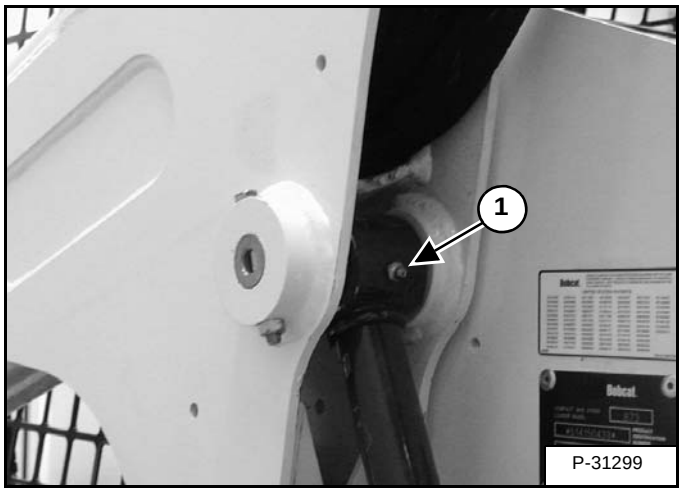
Lubricate the loader as specified for the best performance of the loader. (See SERVICE SCHEDULE on Page 10-70-1.)

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

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

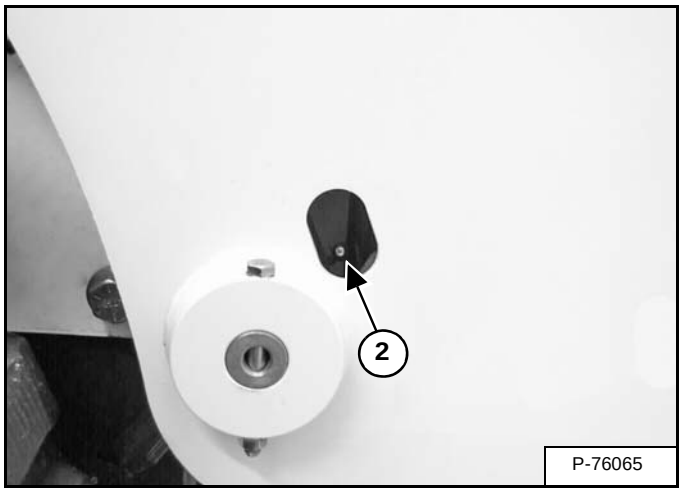
Lubricate the following:

Figure 10-140-1



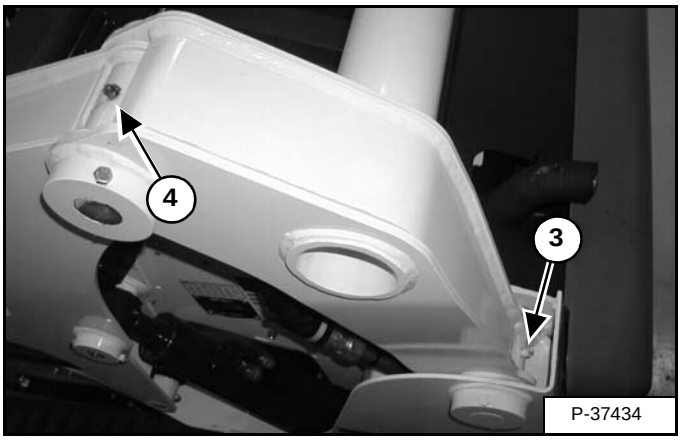
1. Rod End Lift Cylinder (Both Sides) (2) **[Figure 10-140-1]**.

Figure 10-140-2



2. Base End Lift Cylinder (Both Sides) (2) **[Figure 10-140-2]**.

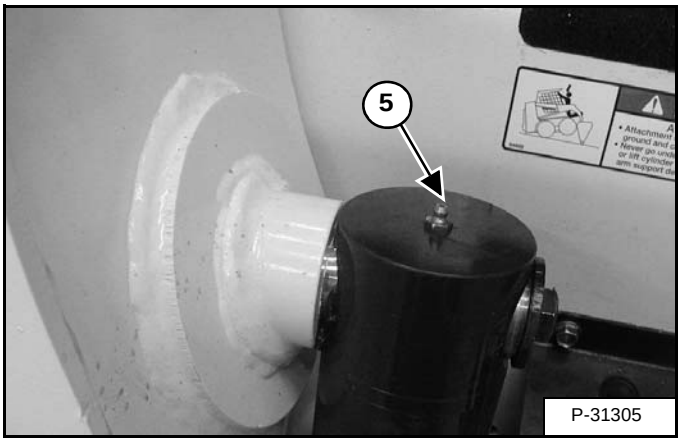
Figure 10-140-3



3. Lift Arm Pivot Pin (Both Sides) (2) **[Figure 10-140-3]**.

4. Lift Arm Link Pivot (Both Ends, Both Sides) (4) **[Figure 10-140-3]**.

Figure 10-140-4

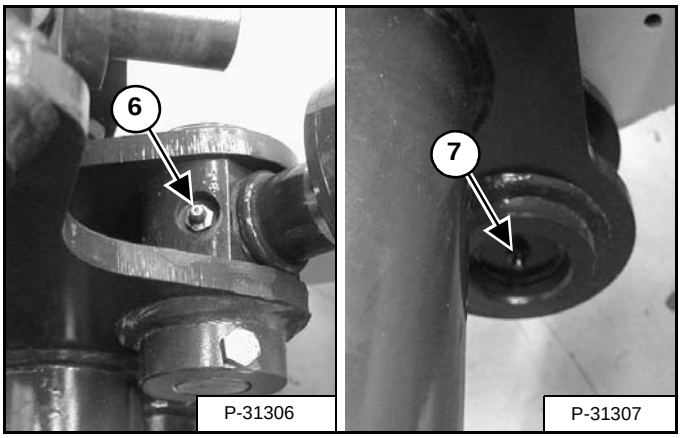


5. Base End Tilt Cylinder (Both Sides) (2) **[Figure 10-140-4]**.

LUBRICATING THE LOADER (CONT'D)

Lubrication Locations (Cont'd)

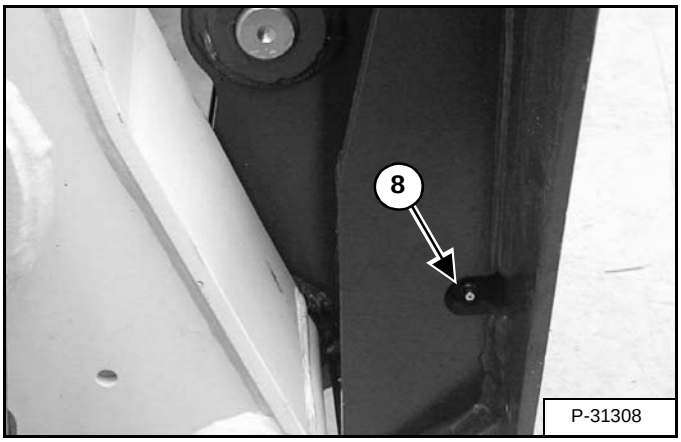
Figure 10-140-5



6. Rod End Tilt Cylinder (Both Sides) (2) **[Figure 10-140-5]**.

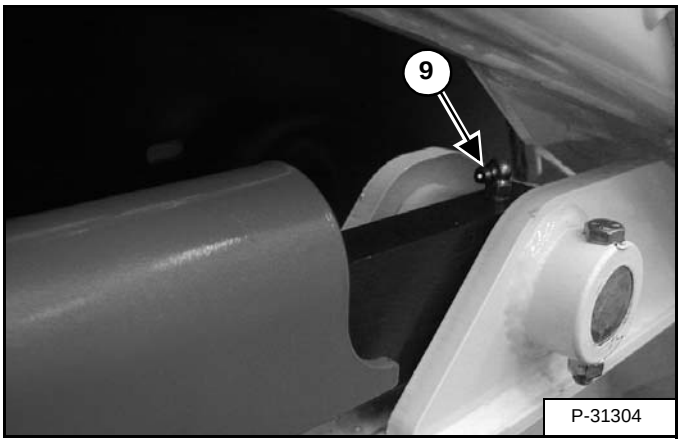
7. Bob-Tach Pivot Pin (Both Sides) (2) **[Figure 10-140-5]**.

Figure 10-140-6



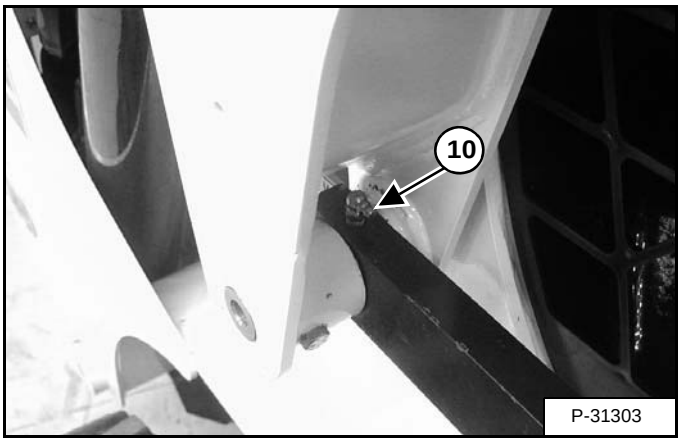
8. Bob-Tach Wedge (Both Sides) (2) **[Figure 10-140-6]**.

Figure 10-140-7



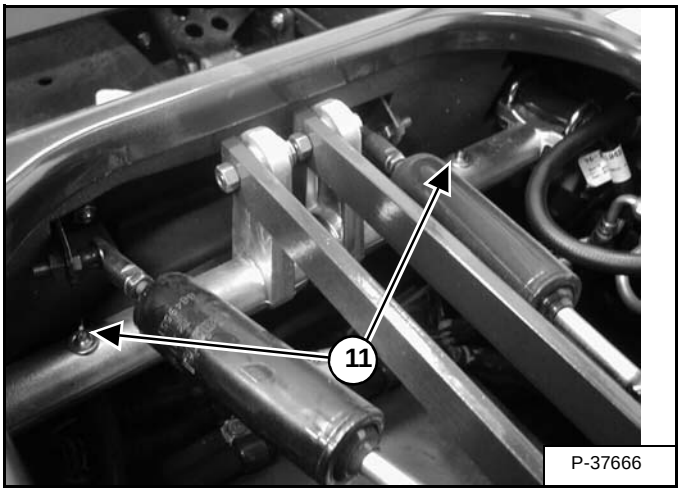
9. Control Link - Rear (Both Sides) (2) **[Figure 10-140-7]**.

Figure 10-140-8



10. Control Link - Front (Both Sides) (2) **[Figure 10-140-8]**.

Figure 10-140-9



NOTE: SJC equipped machines do not have a steering lever shaft.

11. 250 Hours: Steering Lever Shaft (2) **[Figure 10-140-9]**.

SPARK ARRESTOR MUFFLER

Cleaning Procedure

Use the correct service interval for cleaning the spark arrestor muffler. (See SERVICE SCHEDULE on Page 10-70-1.)

Do not operate the loader with a defective exhaust system.

IMPORTANT

This loader is factory equipped with a U.S.D.A. Forestry Service approved spark arrestor muffler. It is necessary to do maintenance on this spark arrestor muffler to keep it in working condition. The spark arrestor muffler must be serviced by dumping the spark chamber every 100 hours of operation.

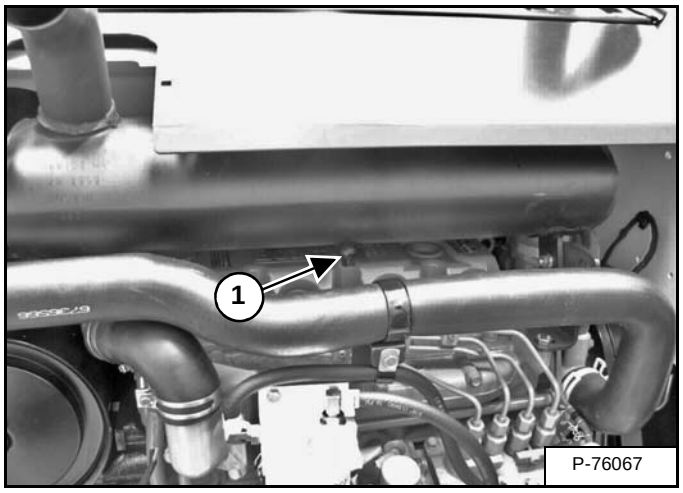
If this machine is operated on flammable forest, brush or grass covered land, it must be equipped with a spark arrestor attached to the exhaust system and maintained in working order. Failure to do so will be in violation of California State Law, Section 4442 PRC.

Consult local laws and regulations for spark arrestor requirements

I-2022-0807

Stop the engine. Open the rear door.

Figure 10



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

WARNING

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

W-2006-0284

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

This will force contaminants out through the cleanout hole.

Stop the engine.

Install and tighten the plug.

Close the rear door.

WARNING

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-2050-1285

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

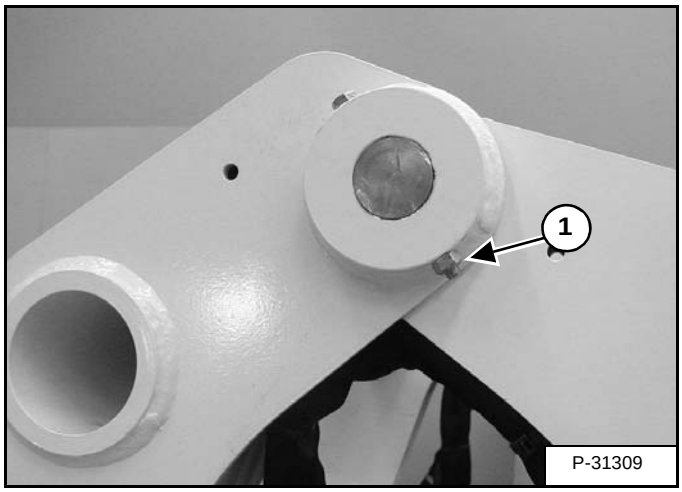
Never use machine in atmosphere with explosive dust or gases or where exhaust can contact flammable material. Failure to obey warnings can cause injury or death.

W-2068-1285

PIVOT PINS

Inspection And Maintenance

Figure 10-160-1



All lift arm and cylinder pivots have a large pin held in position with a retainer bolt and lock nut (Item 1) **[Figure 10-160-1]**.

Check that the lock nuts are tightened to 35-40 ft.-lb. (48-54 N•m) torque.

LOADER STORAGE AND RETURN TO SERVICE

Storage

Sometimes it may be necessary to store your Bobcat Loader for an extended 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 tracks.
- 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 track condition 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.

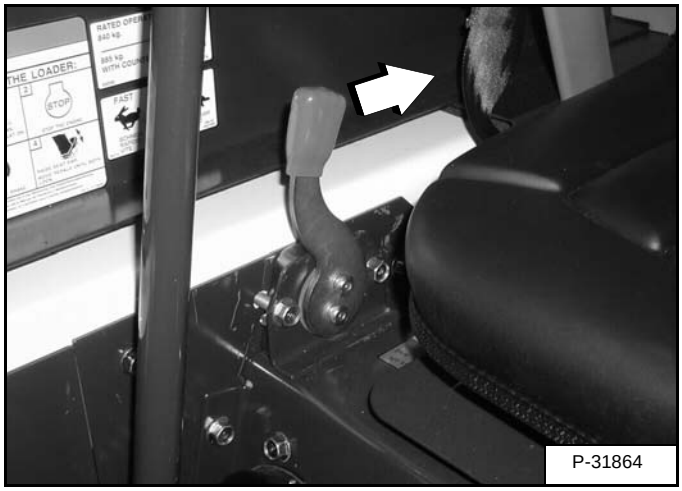
STOPPING THE ENGINE AND LEAVING THE LOADER

Procedure

Stop the loader on level ground.

Fully lower the lift arms and put the attachment flat on the ground.

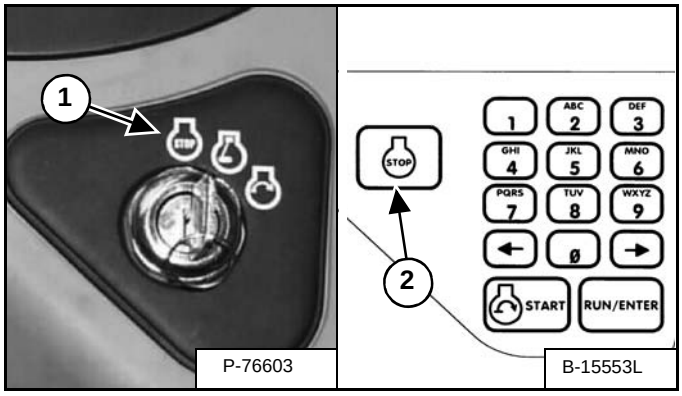
Figure 10-180-1



Pull the engine speed control fully backward **[Figure 10-180-1]** to decrease the engine speed.

Engage the parking brake.

Figure 10-180-2



Turn the key switch to the STOP position (Item 1) (*Standard Key Panel*) *or* press the STOP button (Item 2) (*Deluxe Instrumentation Panel*) **[Figure 10-180-2]**.

NOTE: The loader lights will remain ON for approximately 90 seconds after turning the loader OFF.

Lift 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 Deluxe Instrumentation Panel allows operation of the loader without using a password. (See Password Lockout Feature on Page 60-190-2.)

Figure 10-180-3

Exit the loader using grab handles, safety tread and steps (maintaining a 3-point contact) **[Figure 10-180-3]**.

⚠ WARNING

Before you leave the operator's seat:

- **Lower the lift arms, put the attachment flat on the ground.**
- **Stop the engine.**
- **Engage the parking brake.**
- **Raise seat bar.**
- **(Foot Pedal Controls) Move pedals until both lock.**
- **(Advanced Control System-ACS) Move the hydraulic controls to the NEUTRAL POSITION to make sure that both lift and tilt functions are deactivated.**
  The seat bar system must deactivate the lift and tilt control functions when the seat bar is up. Service the system if hand controls do not deactivate.
- **(Selectable Joystick Controls-SJC) Move the joysticks to the NEUTRAL POSITION to make sure that travel and hydraulic functions are deactivated.**
  The seat bar system must deactivate these functions when the seat bar is up. Service the system if controls do not deactivate.

W-2463-0603

STOPPING THE ENGINE AND LEAVING THE LOADER (CONT'D)

Emergency Exit

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

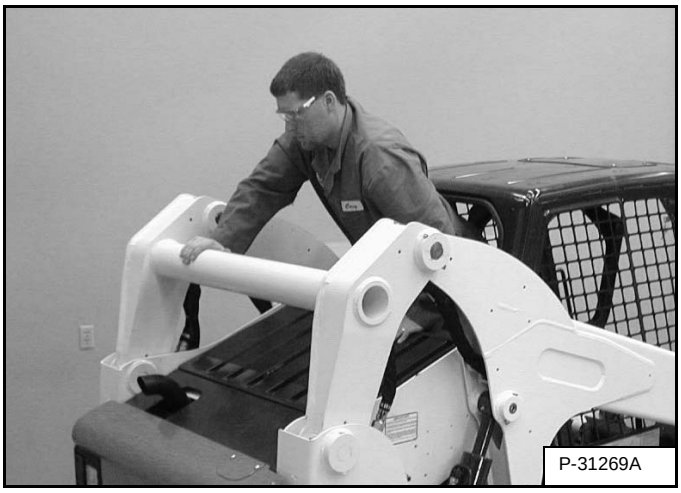
Rear Window (If Equipped)

Figure 10-180-4

Pull on the tag on the top of the rear window to remove the rubber cord **[Figure 10-180-4]**.

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

Figure 10-180-5



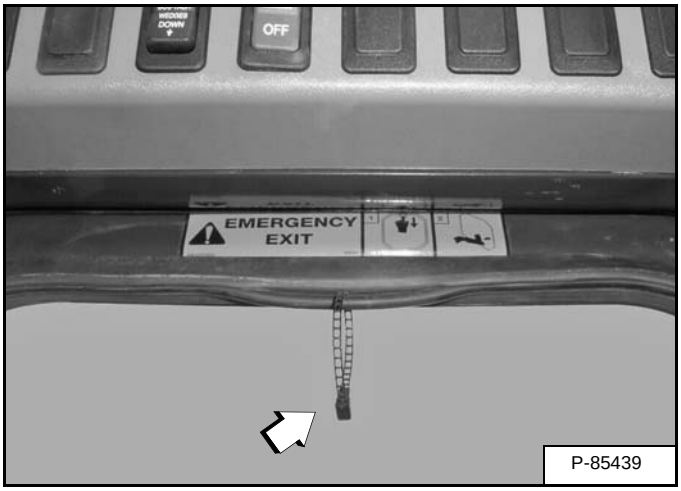
Exit through the rear of the operator cab **[Figure 10-180-5]**.

Front Door (If Equipped)

NOTE: When an Operator Cab Enclosure Kit is installed, the window of the front door can be used as an emergency exit. [Figure 10-180-6]

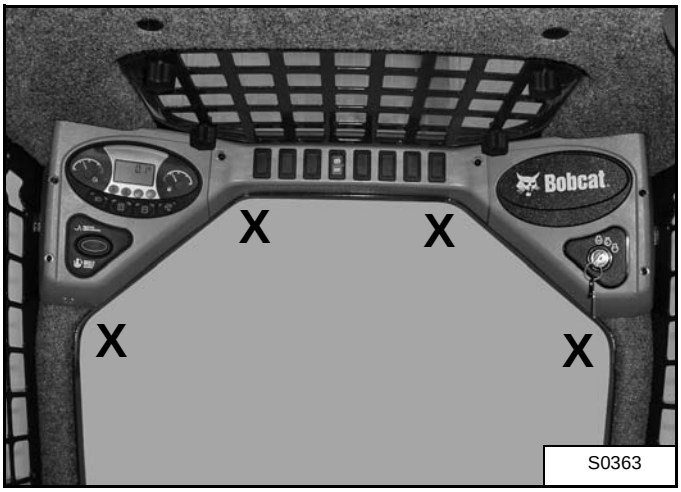
NOTE: If the loader has a Special Applications Door Kit installed, the window of the front door is NOT an emergency exit.

Figure 10-180-6



Pull the plastic loop at the top of the window in the front door to remove the rubber cord **[Figure 10-180-6]**.

Figure 10-180-7



Push the window out with your foot **[Figure 10-180-7]** at any corner of the window.

Exit through the front door.

HYDRAULIC SYSTEM

Continued On Next Page

HYDRAULIC SYSTEM (CONT'D)

Continued On Next Page

HYDRAULIC SYSTEM (CONT'D)

Continued On Next Page

HYDRAULIC SYSTEM (CONT'D)

Continued On Next Page

HYDRAULIC SYSTEM (CONT'D)

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

Thank you very much for your reading.

Please Click Here Then Get More Information.