

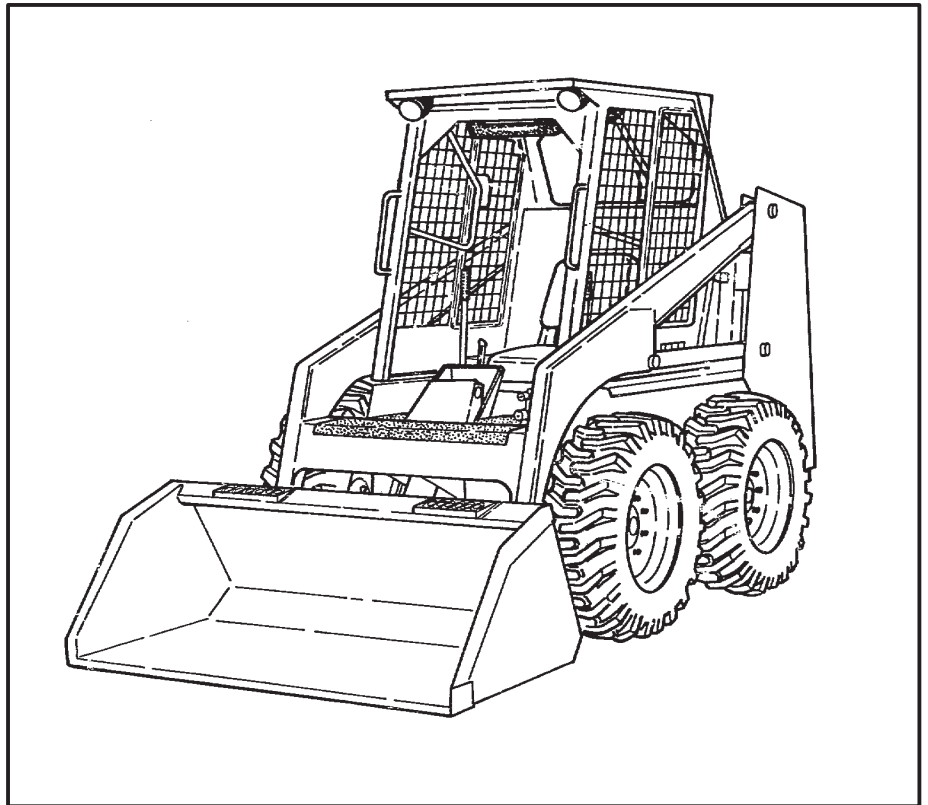
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Service Manual

540 (S/N 501011999 & Below)
543 (S/N 501111999 & Below)



MELROE
INGERSOLL-RAND

6566181 (11-81)

Printed in U.S.A.



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MAINTENANCE SAFETY



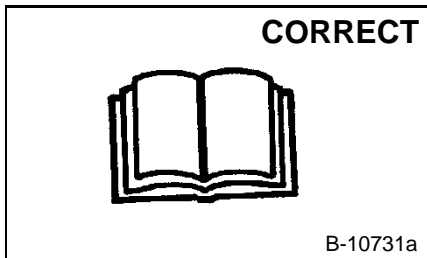
WARNING

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

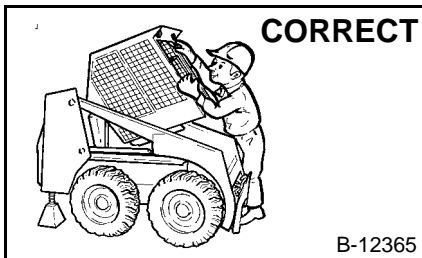
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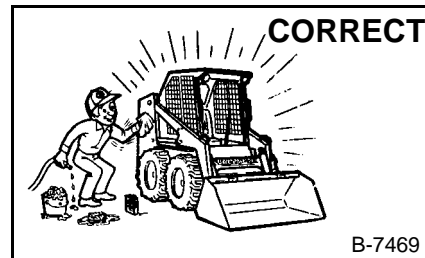
Safety Alert Symbol: This symbol with a warning statement, means: "Warning, be alert! Your safety is involved!" Carefully read the message that follows.



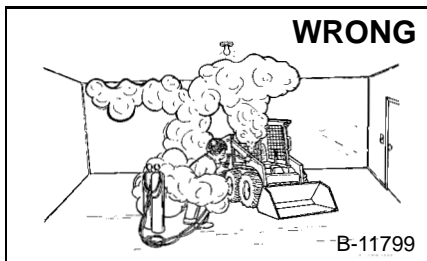
Never service the Bobcat Skid-Steer Loader without instructions.



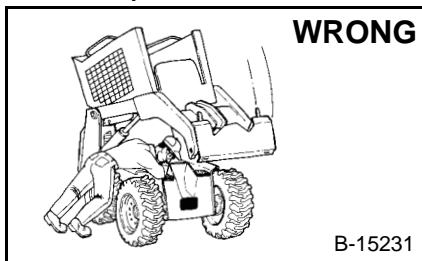
Use the correct procedure to lift or lower operator cab.



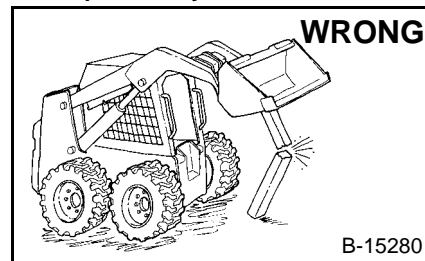
Cleaning and maintenance are required daily.



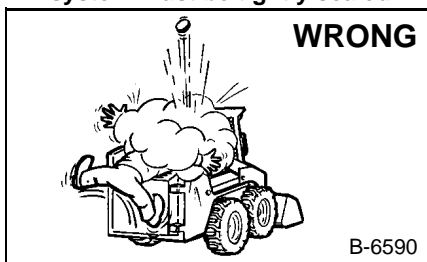
- Have good ventilation when welding or grinding painted parts.
- Wear dust mask when grinding painted parts. Toxic dust and gas can be produced.
- Avoid exhaust fume leaks which can kill without warning. Exhaust system must be tightly sealed.



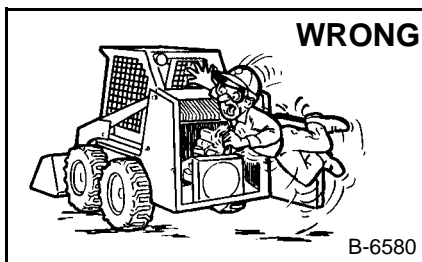
Disconnecting or loosening any hydraulic tubeline, hose, fitting, component or a part failure can cause lift arms to drop. Do not go under lift arms when raised unless supported by an approved lift arm support device. Replace it if damaged.



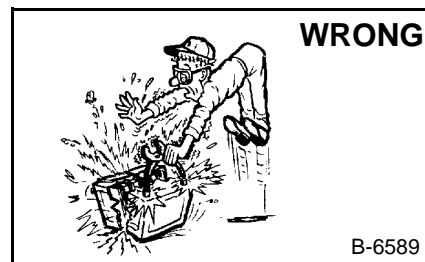
- Never work on loader with lift arms up unless lift arms are held by an approved lift arm support device. Replace if damaged.
- Never modify equipment or add attachments not approved by Bobcat Company.



- 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.



- 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.



- 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.



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SAFETY INSTRUCTIONS

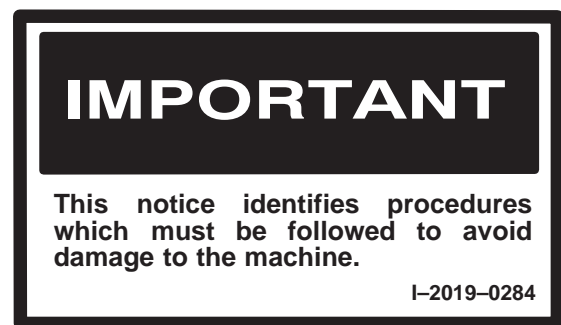
WARNING

Instructions are necessary before operating or servicing machine. Read Operation & Maintenance Manual, 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. Failure to follow instructions can cause injury or death.

W-2003-0797

The following publications provide information on the safe use and maintenance of the loader 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 loader gives operating information as well as routine maintenance and service procedures. It is a part of the loader and must stay with the machine when it is sold. Replacement Operation & Maintenance Manuals can be ordered from your Bobcat loader dealer.
- The loader has machine signs (decals) which instruct on the safe operation and care. The signs and their locations are shown in the Operation & Maintenance Manual. Replacement signs are available from your Bobcat loader dealer.
- The loader has a plastic Operator's Handbook fastened to the operator cab. Its 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 EMI Safety Manual (available in Spanish) delivered with the loader 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. This course is intended to provide rules and practices for correct operation of the Bobcat loader. The course is available in English and Spanish version.
- The Bobcat Skid-Steer Loader Safety Video is available from your Bobcat Dealer.



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

SAFETY INSTRUCTIONS (Cont'd)

- Wear tight fitting clothing. Always wear safety glasses when maintaining or servicing loader. Safety glasses, hearing protection or loader special applications kit are required for some work. See your dealer for Melroe Safety equipment.
- Know where fire extinguisher and first aid kit are located and how to use them.
- Do not use the Bobcat loader where exhaust, arcs, sparks or hot components can contact flammable material, explosive dust or gases.
- The engine compartment and engine cooling system must be inspected every day and cleaned if necessary to prevent fire hazard and overheating.
- Check all electrical wiring and connections for damage. Keep the battery terminals clean and tight. Repair or replace any damaged part.
- Check fuel and hydraulic tubes, hoses and fittings for damage and leakage. Never use open flame or bare skin to check for leaks. 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.
- Follow any environmental safety regulations when disposing of used fluids such as engine oil, grease or anti-freeze.
- Do not use ether or starting fluids on engines which have glow plugs. These starting aids can cause explosion and injure you or bystanders.
- Always clean the loader and disconnect the battery before doing any welding. Cover rubber hoses, battery and all other flammable parts. Keep a fire extinguisher near the loader 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.
- Stop the engine and let it cool before adding fuel. No smoking!
- Use the procedure in the Operation & Maintenance or Service Manuals for connecting the battery.

A fire extinguisher is available from your local dealer. The fire extinguisher can be installed in the location shown [A].



FOREWORD

This Service Manual gives the instructions for correct servicing, adjustment and overhauling of the Bobcat loader Hydraulic/Hydrostatic System, Drive System, Main Frame, Electrical System and Engine Service.

Make reference to the Operator's Manual for operating instructions (Starting, Daily Checks, Loader Operation, etc.).

A general inspection of the following items must be made when the Bobcat loader has had service or repair.

1. Check hydraulic/hydrostatic fluid level, engine oil level and fuel supply.
2. Inspect for any sign of fuel, oil or hydraulic fluid leaks.
3. Lubricate the loader.
4. Check the condition of the battery(ies) and the cables.
5. Inspect the air cleaner system for damage or leaks.
6. Check the warning lights to see if they light.
7. Check the tires for wear and pressure.
8. Check the Bob-Tach for wear and see if the wedges are damaged.
9. Check the safety items for condition (Operator Guard, Seat Belt, Seat Bar, Safety Signs (Decals), Safety Treads, etc.).
10. Make an inspection for loose or broken parts or connections.
11. Operate the loader, checking all functions.

Check the above items. If any are in need of repair or adjustment, contact the owner.

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**PREVENTIVE
MAINTENANCE**

**HYDRAULIC
SYSTEM**

**HYDROSTATIC
SYSTEM**

**DRIVE
SYSTEM**

**MAIN
FRAME**

**ELECTRICAL
SYSTEM**

**ENGINE
SERVICE**

**TECHNICAL
DATA**

**ALPHABETICAL
INDEX**



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PREVENTIVE MAINTENANCE

PREVENTIVE MAINTENANCE

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WARNING

DO NOT service the Bobcat loader without instructions or taking the necessary safety precautions. Before working on the loader, see the warnings and instructions at the beginning of this Service Manual. After making the repair or adjustment, always check the function of the loader. Failure to obey warnings may cause injury or death.



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1 PREVENTIVE MAINTENANCE

1-1 INTRODUCTION

The Preventive Maintenance Section of this Service Manual gives general maintenance procedures for the Bobcat loader. The other sections of the Service Manual will give the detailed description needed for disassembly and assembly and when replacement parts are needed.

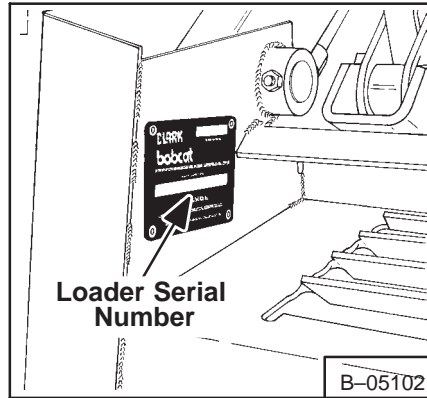


Fig. 1-1 Loader Serial Number

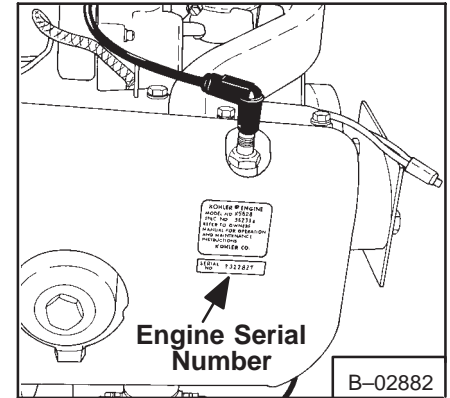


Fig. 1-2 Engine Serial Number (540)

1-1.1 Serial Number Identification

It is important to make correct reference to the Serial Number of the Bobcat loader and/or engine when making repairs or ordering parts. It is possible that the present loaders do not use all the same parts as the earlier loaders. It is possible that different procedures are used for service repair.

1-1.2 Loader Serial Number

The Bobcat loader serial number plate location is on the inside of the left upright, above the grill (Fig. 1-1).

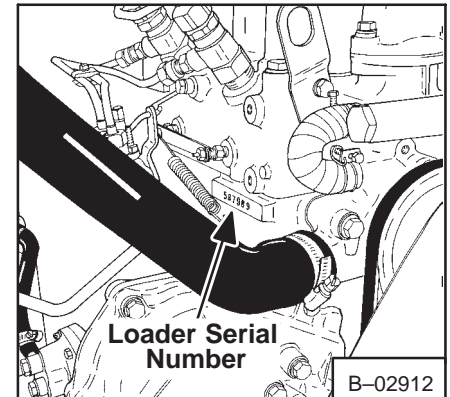
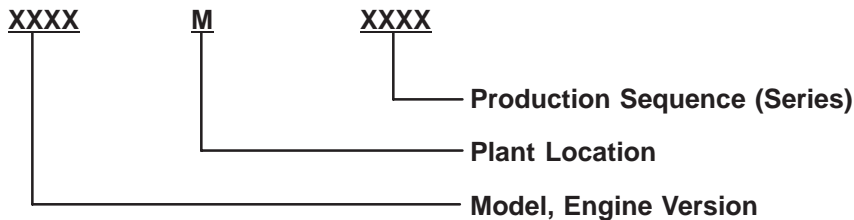


Fig. 1-3 Engine Serial Number (543)

Explanation of the Serial Number:



1-1.3 Engine Serial Number

The engine serial number for the 540 Bobcat loader is located on the blower housing at the right side of the engine (Fig. 1-2).

The engine serial number for the 543 Bobcat loader is located at the left side of the engine above the fuel injection pump (Fig. 1-3).

1-1.4 Pre-Delivery Inspection (Fig. 1-4).

The Pre-Delivery Inspection must be completed when the new Bobcat gets to the dealer and before it is delivered to the customer.

The purpose of the Pre-Delivery Inspection is:

1. To see if the Bobcat loader is in correct operating condition at the time of the delivery.

Fig. 1-4 Pre-Delivery Inspection Form

- To let the factory know when something is wrong with the Bobcat loader so that the problem can be corrected and prevented in the future.

All items on the inspection form must be completed according to the specifications in this manual.

One copy of the completed form is to be mailed to:

**CLARK EQUIPMENT
MELROE DIVISION
QUALITY CONTROL DEPT.
GWINNER, ND 58040**

The other copy is for the dealer records.

1-1.5 Thirty Hour Inspection (Fig. 1-5)

The 30 Hour Inspection must be completed after the first 30 hours of loader operation.

The purpose of the 30 Hour Inspection is:

- For adjustment and inspection after the first work period.
- To correct wrong maintenance and operation methods.
- For demonstrating correct service procedure to the customer.

All the items on the 30 Hour Inspection must be completed. The form must be done by the serviceman (mechanic), according to specifications in this manual.

When the 30 Hour Inspection has been completed, the form must be signed by (1) the serviceman (mechanic) that completed the inspection; (2) the Dealer; and (3) the owner/operator.

One copy of the completed form is to be mailed to:

**CLARK EQUIPMENT
MELROE DIVISION
SERVICE DEPT.
GWINNER, ND 58040**

One copy is for the owner/operator and one copy for the Dealer's records.

Fig. 1-5 30 Hour Inspection

1-2 SERVICE SCHEDULE

Maintenance work must be done at regular intervals. Failure to do so will result in damage to the Bobcat loader or the engine. The service schedule is a guide for correct maintenance of the Bobcat loader. DO NOT change this service schedule unless the frequency of service is increased when the Bobcat loader is operated in very hot, cold, dusty or corrosive conditions.

WARNING

DO NOT work on the loader with the lift arms in a raised position without support. Use lift arm stops or other methods.

MODEL		SERVICE SCHEDULE		HOURS					
540	543	ITEM	SERVICE REQUIRED	8-10	50	100	250	500	1000
		Engine Air Cleaner	Check the condition indicator. Make inspection of the air cleaner system. Replace the element when the red ring shows in the indicator window.						
		Engine Oil	Check level and add oil as needed.						
		Engine Cooling System	Check and clean as needed (Including oil cooler grill).						
		Engine Coolant System	Check the coolant level and add as needed. Remove any debris from the radiator grill area.						
		Tires	Check for damage and check the tire pressure.						
		Operator Guard, Seat Belt & Seat Bar	Check the operator guard fastening bolts to make sure they are tight. Check the condition of the seat belt. Check the seat bar for correct operation.						
		Safety Signs (Decals)	Check for damaged decals. Replace any decals that are not there.						
		Pivot Points	Add lubricant to all fittings.						
		Hydraulic/Hydrostatic Fluid	Check the fluid level and add the recommended fluid as needed (See Section 8 for correct fluid).						
		Engine Oil and Filter	Change, fill with new clean oil according to oil specification chart & install new filter.						
		Battery	Check the battery cables & the battery water level.						
		Control Pedals and Steering Levers	Check both for correct operation. Make repairs & adjustments as needed.						
		Bob-Tach	Check locking levers and wedges for condition and operation.						
		Brakes	Check operation. Make adjustment as needed.						
		Chaincase Fluid	Check level. Add fluid as needed.						
		Hydraulic/Hydrostatic Filter	Replace the filter element.						
		Spark Arrestor Muffler	Remove the plug and clean the spark chamber.						
		Engine Ignition System	Check the points & timing. Replace the spark plugs.						
		Engine Cylinder Head Bolts	Tighten to correct torque after first 100 hours of loader operation. Adjust valve tappets.						
		Engine Air Housing	Remove and clean housing and cooling fins.						
		Engine Air Cleaner System	Check system for leaks. Replace element as needed.						
		Injection Pump Oil	Check oil level at check plug.						
		Engine Fuel Filter	Replace element or clean as needed.						
		Injection Pump Oil	Replace the oil in the injection pump reservoir.						
		Seat Bar	Lubricate the detent mechanism.						
		Steering Levers	Add grease to the pivot bearings.						
		Chaincase	Replace the fluid.						
		Hydraulic/Hydrostatic System	Replace the fluid. Clean the inlet screen and vent.						

1-3 ENGINE SERVICE (General)

! WARNING

Stop, cool and clean the engine of flammable material. Never service or adjust machine with the engine running unless instructed to do so.

Open the rear door to service the engine. Pull the door latch up (Fig. 1-6) and turn to the left to release the door latch (Fig. 1-7). The door can then be fully opened to get to the engine. Push down on the door stop to hold the door open (Fig. 1-8), if so equipped. See Section 5 for the Door Latch Adjustment.

! WARNING

Keep the rear door closed except for service. Make sure you close the door and fasten the latch tightly before operating the Bobcat loader.

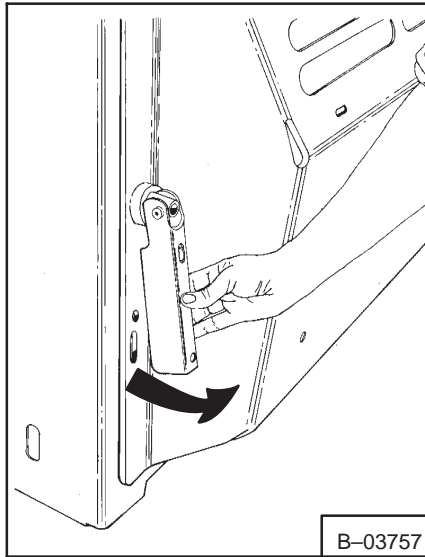


Fig. 1-6 Opening Door Latch

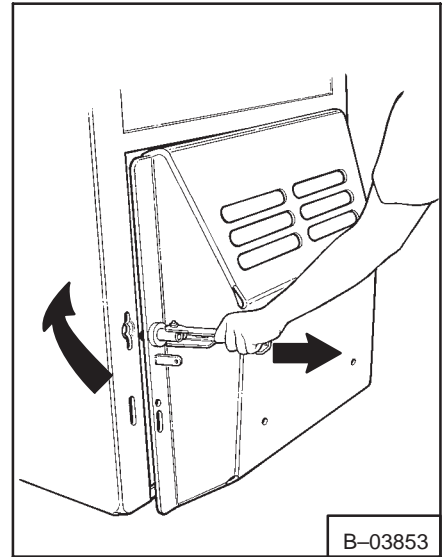


Fig. 1-7 Opening Rear Door

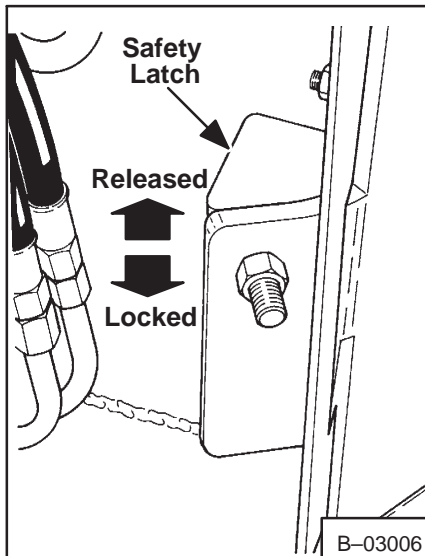


Fig. 1-8 Safety Latch

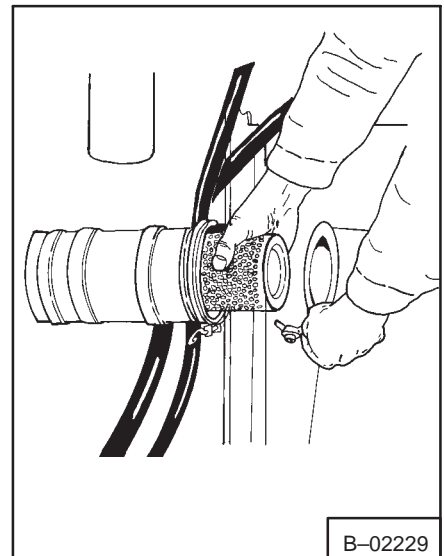


Fig. 1-9 Removing Air Cleaner Element

1-3.1 Air Cleaner Service

It is important to service the air cleaner at regular intervals for good engine performance and long service life.

Service the air cleaner as follows (Fig. 1-9):

1. Remove the dust cap and clean every day.
2. Make replacement of the element only when it becomes necessary.

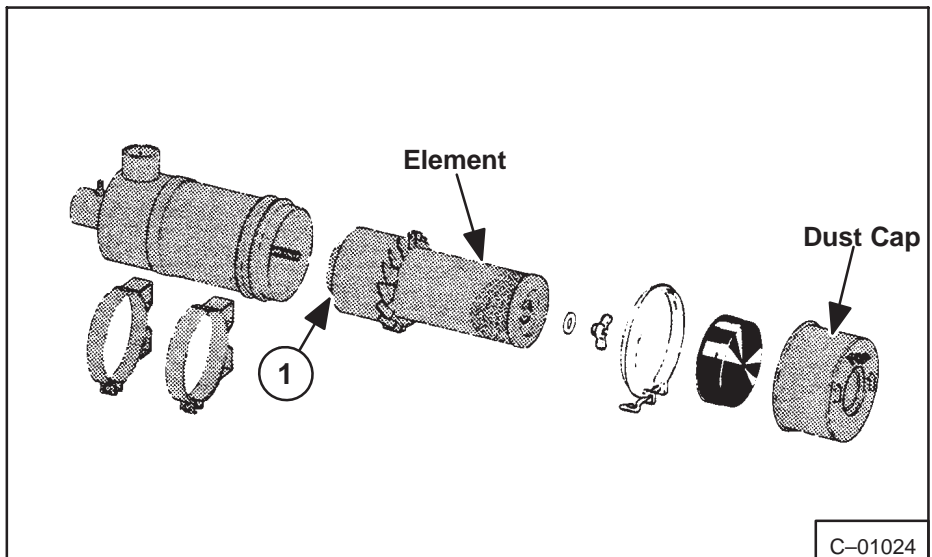


Fig. 1-10 Air Cleaner Assembly

3. Clean the inside of the filter housing so that the element has a smooth surface to contact at the seal (Fig. 1-10, Item 1). Check the filter housing for holes for corrosion, especially if the Bobcat loader is used in fertilizer application.
4. Install the filter element and tighten the wing nut.
5. Install the dust cap and tighten the clamp.
6. Check the hoses and clamps are tight.

1-3.2 Fuel System



WARNING

Never add fuel to the Bobcat loader when the engine is running or is hot. NO SMOKING!

Use 85 octane regular gasoline in the engine of the 540 Bobcat loader.

Use number 2 diesel fuel in the engine of the 543 Bobcat loader. During very cold temperature conditions, number 1 fuel is recommended.

To add fuel to the tank (Fig. 1-11 & 1-12), use the following procedure:

1. Use a clean, approved safety container to add the fuel.
2. The key switch must be in the "OFF" position and the engine cool.
3. Add fuel only in an area that has free movement of air and no open flames or sparks. NO SMOKING (Fig. 1-13).
4. Use only clean fuel of the correct specifications.
5. Tighten the cap (Fig. 1-11, Item 1 & 1-12, Item 1) on the fuel tank.

540 Bobcat Loader: There is a fuel filter (Fig. 1-11, Item 2) in the fuel line by the fuel shut-off valve. The fuel filter must be replaced every 250 hours of loader operation. See Section 7 for the correct replacement procedure.

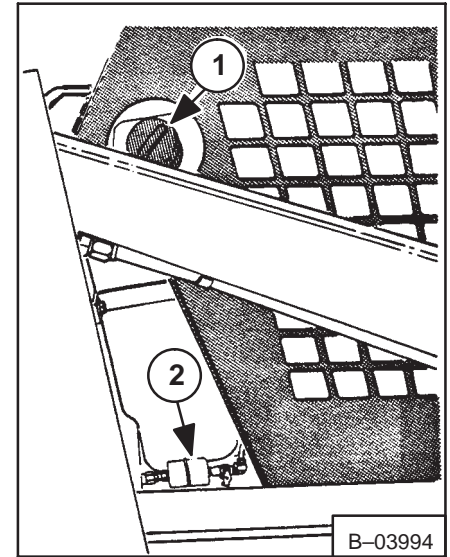


Fig. 1-11 Fuel Fill Location (540)

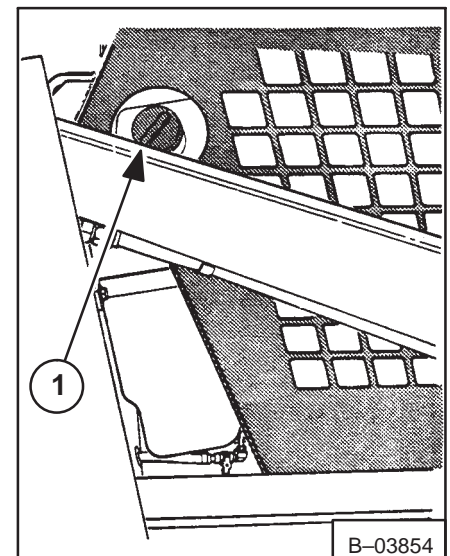


Fig. 1-12 Fuel Fill Locations (543)

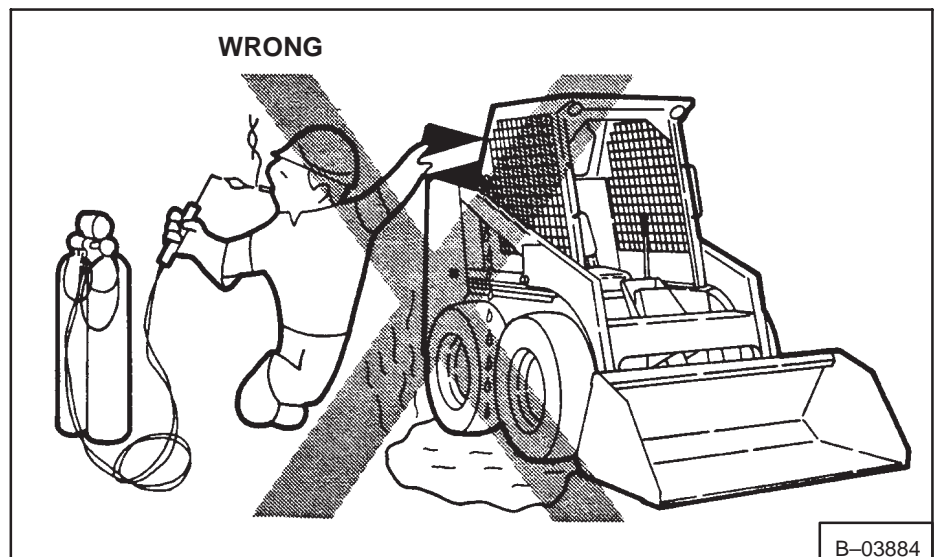


Fig. 1-13 Fuel Fill Warning

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