

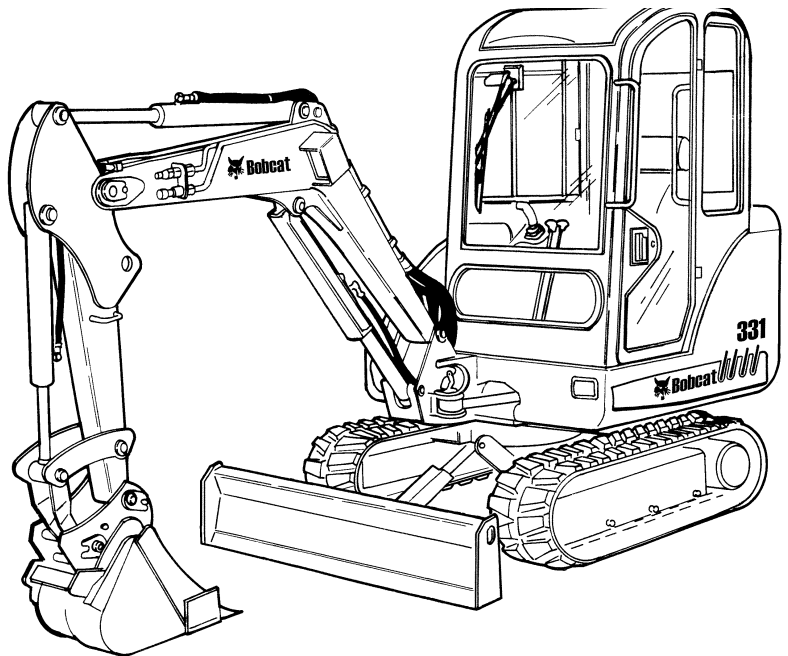
**331  
331E  
334**



**Bobcat®**

# **Service Manual**

**331 - S/N 234313000 & Above  
331E - S/N 234412000 & Above  
334 - S/N 234513000 & Above  
(G Series)**



# MAINTENANCE SAFETY



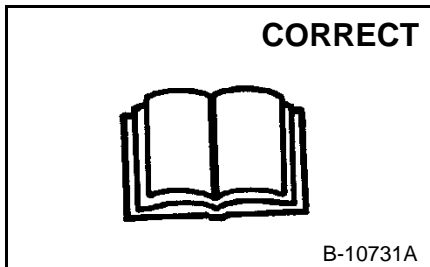
## WARNING

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

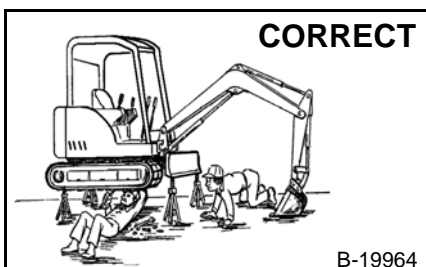


**Safety Alert Symbol:** This symbol with a warning statement, means: "Warning, be alert! Your safety is involved!" Carefully read the message that follows.



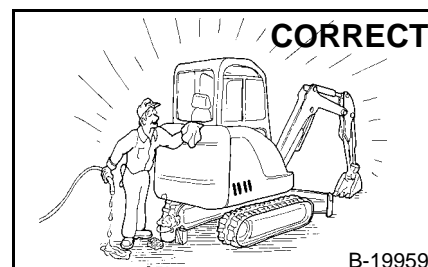
B-10731A

- ⚠ Never service the Bobcat Compact Excavator without instructions.



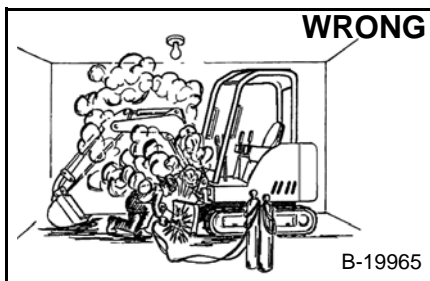
B-19964

- ⚠ Use the correct procedure to lift and support the excavator.



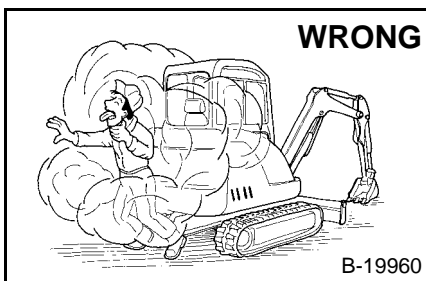
B-19959

- ⚠ Cleaning and maintenance are required daily.



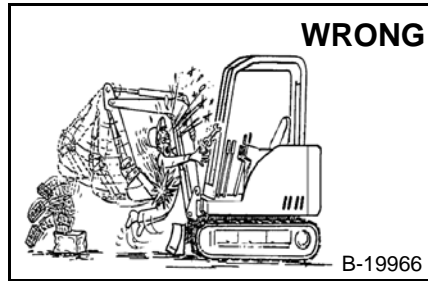
B-19965

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



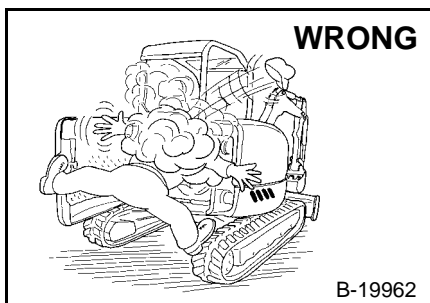
B-19960

- ⚠ Vent exhaust to outside when engine must be run for service.
- ⚠ Exhaust system must be tightly sealed. Exhaust fumes can kill without warning.



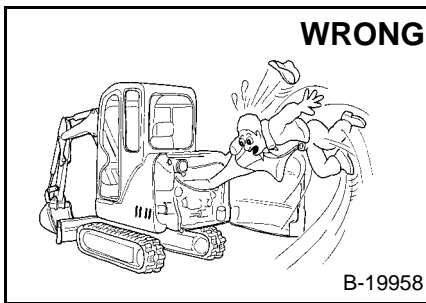
B-19966

- ⚠ Always lower the bucket and blade to the ground before doing any maintenance.
- ⚠ Never modify equipment or add attachments not approved by Bobcat Company.



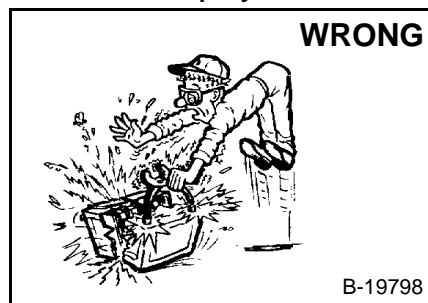
B-19962

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



B-19958

- ⚠ 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 protections approved for type of welding.
- ⚠ Keep rear door closed except for service. Close and latch door before operating the excavator.



B-19798

- ⚠ 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.

MSW28-0805

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The full manual is available for immediate download.

**<https://www.ebooklibonline.com>**

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**SAFETY AND  
MAINTENANCE**

**HYDRAULIC  
SYSTEM**

**UNDERCARRIAGE**

**UPPERSTRUCTURE  
& SWING  
SECTION**

**ELECTRICAL  
SYSTEM AND  
ANALYSIS**

**ENGINE  
SERVICE**

**HEATING,  
VENTILATION,  
AIR CONDITIONING**

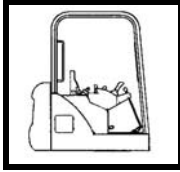
**SPECIFICATIONS**

# FOREWORD

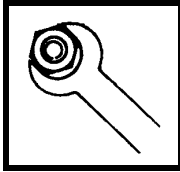
This manual is for the Bobcat Hydraulic Excavator mechanic. It provides necessary servicing and adjustment procedures for the hydraulic excavator and its component parts and systems. Refer to the Operation & Maintenance Manual for operating instructions, starting procedure, daily checks, etc.

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

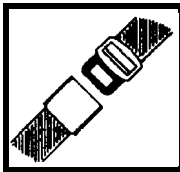
1. Check that the ROPS/TOPS/FOPS is in good condition and is not modified.



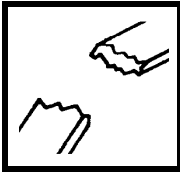
2. Check that ROPS/TOPS mounting hardware is tightened and is Bobcat approved.



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



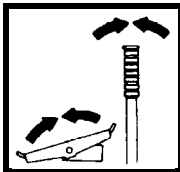
4. Inspect for loose or broken parts or connections.



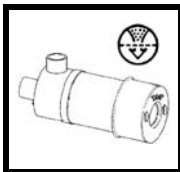
5. Machine signs must be legible and in the correct location.



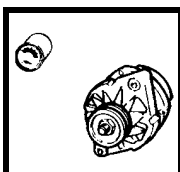
6. Steering levers, control levers and foot pedals must return to neutral. Check that foot pedals lock and control lever locks are in working order.



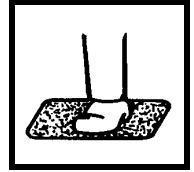
7. Inspect the air cleaner for damage or leaks. Check the condition of the element.



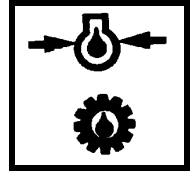
8. Check the electrical charging system.



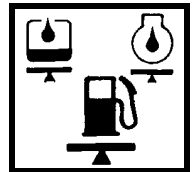
9. Safety treads must be in good condition.



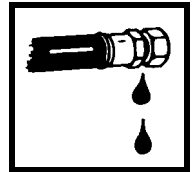
10. Check for correct function of indicator lamps (Optional on some models).



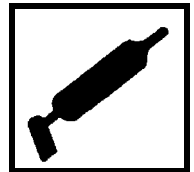
11. Check hydraulic fluid level, engine oil level and fuel supply.



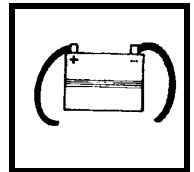
12. Inspect for fuel, oil or hydraulic fluid leaks.



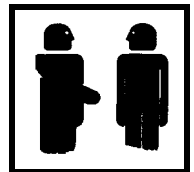
13. Lubricate the excavator.



14. Check the condition of the battery and cables.



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



## 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



## WARNING

Warnings on the machine and in the manuals are for your safety. Failure to obey warnings can cause injury or death.

W-2044-1285

## IMPORTANT

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

I-2019-0284

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 Compact Excavator Operator Training Course is available through your local dealer or at [www.training.bobcat.com](http://www.training.bobcat.com) or [www.bobcat.com](http://www.bobcat.com). This course is intended to provide rules and practices of correct operation of the Bobcat Excavator. 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](http://www.training.bobcat.com) or [www.bobcat.com](http://www.bobcat.com). They provide information for safe and correct service procedures.
- The Bobcat Compact Excavator Safety Video is available from your Bobcat dealer or at [www.training.bobcat.com](http://www.training.bobcat.com) or [www.bobcat.com](http://www.bobcat.com).

SI EXC-0206 SM

331/331E/334 Excavator  
Service Manual

## SAFETY INSTRUCTIONS (CONT'D)

### Fire Prevention

The machine and attachments have components that are at high temperature 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.

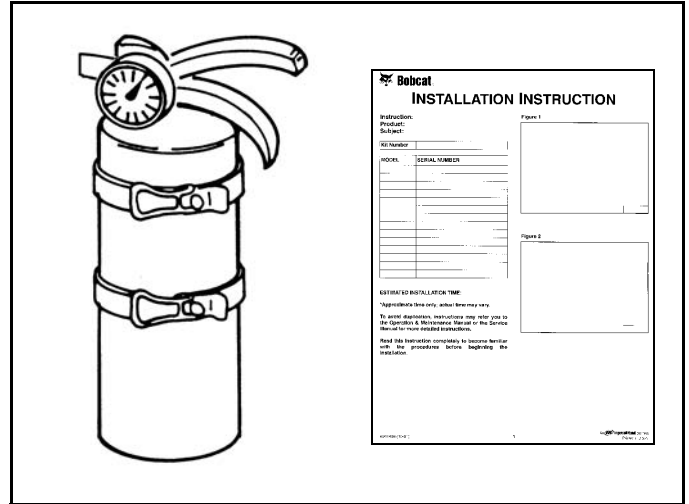
Flammable debris (leaves, straw, etc.) must be removed regularly. If flammable debris is allowed to accumulate, it will increase fire hazard. Clean often to avoid this accumulation. Flammable debris in the engine compartment is a potential hazard.

The spark arrestor muffler 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.

- Do not use the machine where exhaust, arcs, sparks or hot components can contact flammable material, explosive dust or gases.
- The operator cab, 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.
- Do not use ether or starting fluids on any engine which has glow plugs. These starting aids can cause explosion and injure you or bystanders.
- Always clean the machine, disconnect the battery, and disconnect the wiring from the 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 a 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 Manual for connecting the battery and for jump starting.
- Use the procedure in the Operation & Maintenance Manual for cleaning the spark arrestor muffler (if equipped).

Figure 1



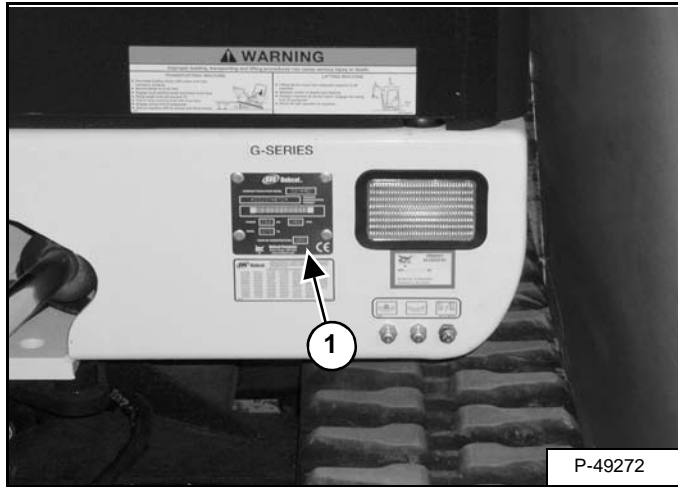
- Know where fire extinguishers and first aid kits are located and how to use them. Fire extinguishers are available from your Bobcat dealer [Figure 1].

## SERIAL NUMBER LOCATIONS

Always use the serial number of the excavator 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.

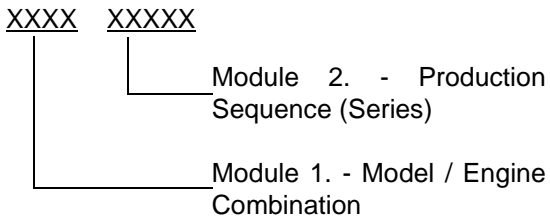
### Excavator Serial Number

Figure 1



The excavator serial number plate (Item 1) is located on the frame of the machine in the location shown [Figure 1].

Explanation of excavator Serial Number:



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 excavator is produced.

### Engine Serial Number

Figure 2

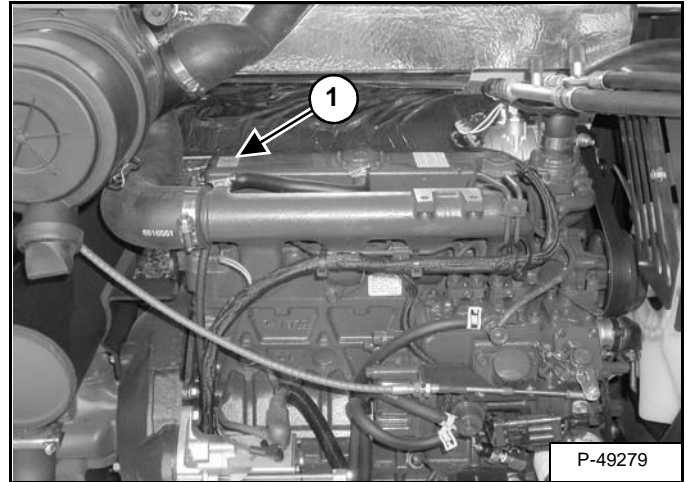
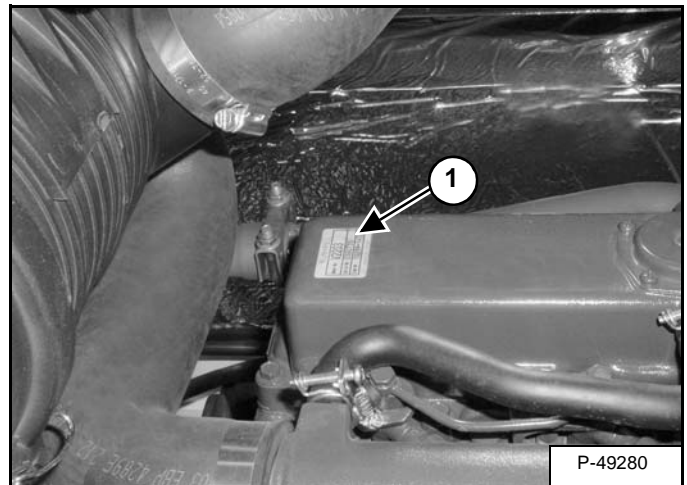


Figure 3



The engine serial number (Item 1) [Figure 2] & [Figure 3] is located on the engine in the locations shown.

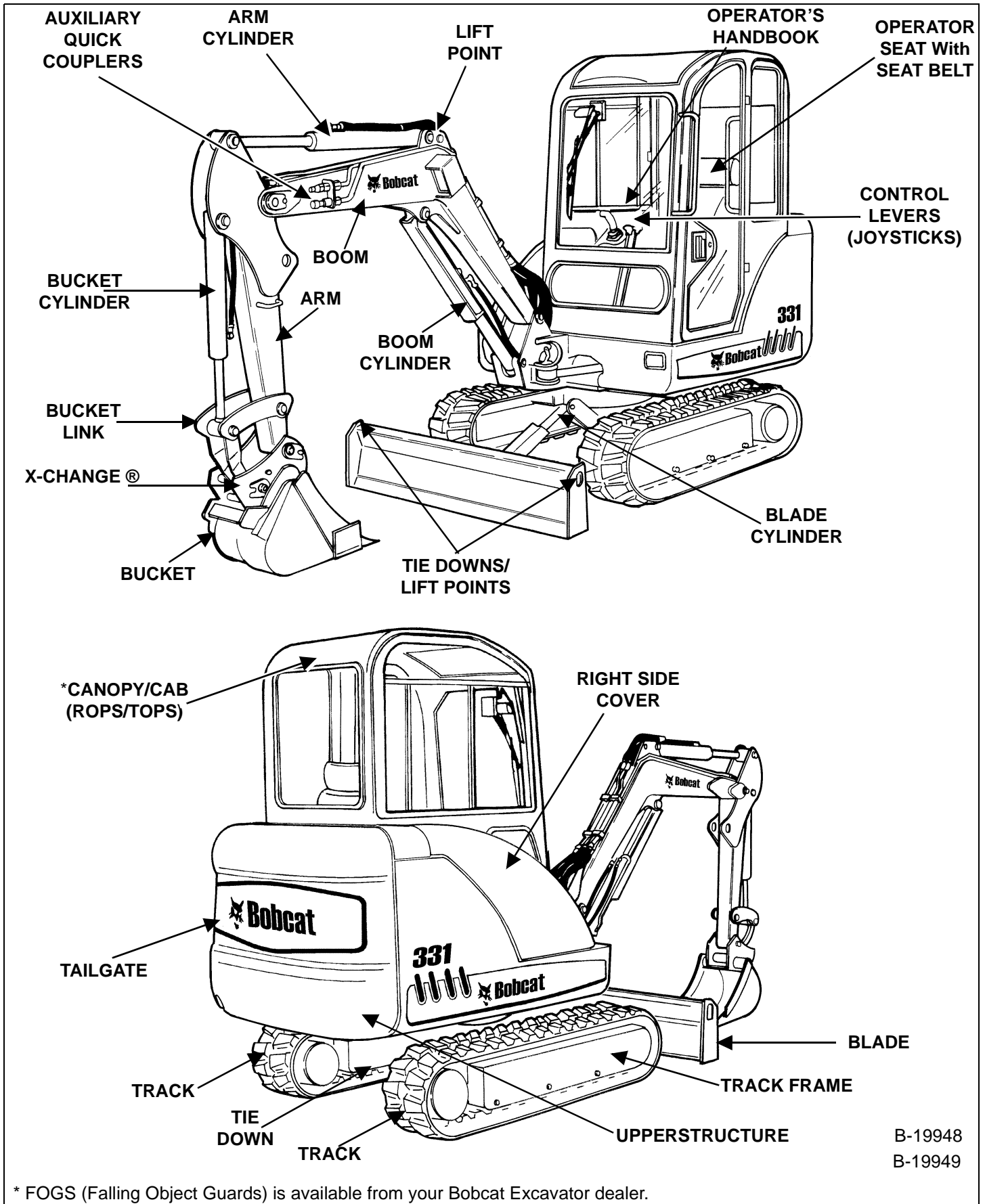
## DELIVERY REPORT

Figure 4

The diagram shows a form titled "DELIVERY REPORT" with a "WARNING" section and a reference code "B-16315".

The delivery report must be filled out by the dealer and signed by the owner or operator when the Bobcat Excavator is delivered. An explanation of the form must be given to the owner. Make sure it is filled out completely **[Figure 4]**.

**BOBCAT EXCAVATOR IDENTIFICATION**



B-19948  
B-19949

\* FOGS (Falling Object Guards) is available from your Bobcat Excavator dealer.

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## LIFTING AND BLOCKING THE EXCAVATOR

### Procedure

Always park the machine on a level surface.



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.

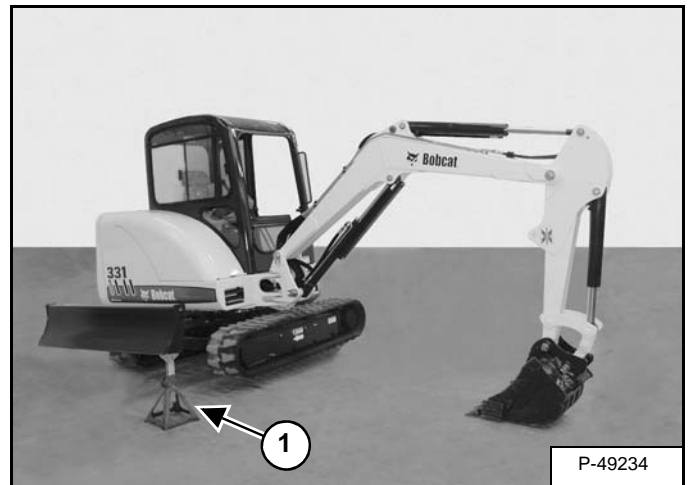
W-2003-0903



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 10-10-1



Raise one side of the machine (approximately four inches) using the boom and arm [Figure 10-10-1].

Raise the blade fully and install jack stands under the blade and track frame (Item 1) [Figure 10-10-1]. Raise the boom until all machine weight is on the jack stands.

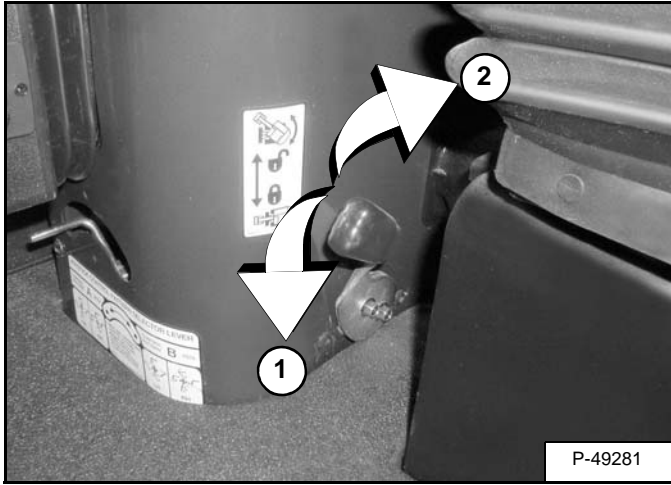
Repeat the procedure for the other side.

Stop the engine.

## UPPERSTRUCTURE SLEW LOCK

### Operation (Early Models)

Figure 10-11-1



Push the lever down (Item 1) [Figure 10-11-1] to engage the upperstructure slew lock.

Pull the lever up (Item 2) [Figure 10-11-1] to disengage the upperstructure slew lock.

**NOTE:** Upperstructure must be in the straight forward or straight rearward position for upperstructure to lock.

## WARNING

### AVOID INJURY

The upperstructure slew lock lever must be engaged when transporting the machine.

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## WARNING

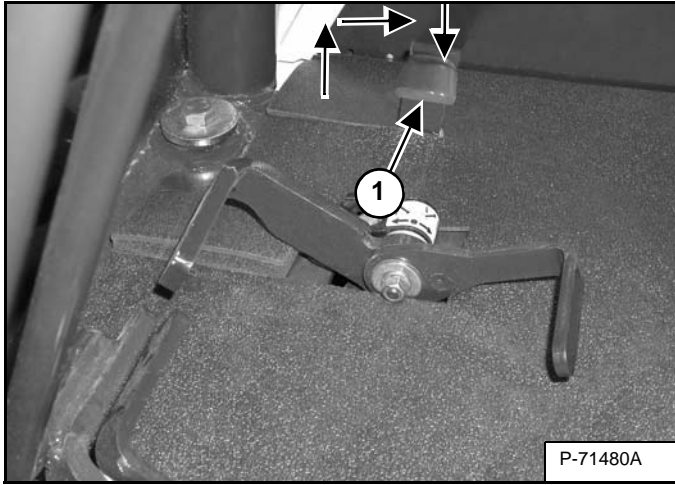
Never use attachments or buckets which are not approved by Bobcat Company. Buckets and attachments for safe loads of specified densities are approved for each model. Unapproved attachments can cause injury or death.

W-2052-0500

## UPPERSTRUCTURE SLEW LOCK (CONT'D)

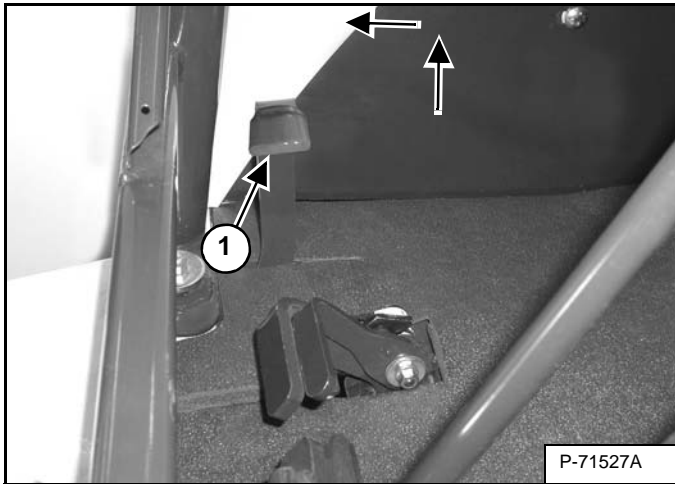
### Operation (Later Models)

Figure 10-11-2



Move the lever (Item 1) [Figure 10-11-2] *up* slightly, then to the rear and down to engage the upperstructure slew lock.

Figure 10-11-3



Move the lever (Item 1) [Figure 10-11-3] *up* and then forward to disengage the upperstructure slew lock.

**NOTE:** Upperstructure must be in the straight forward or straight rearward position for upperstructure to lock.



## WARNING

### AVOID INJURY

The upperstructure slew lock lever must be engaged when transporting the machine.

W-2197-0904



## WARNING

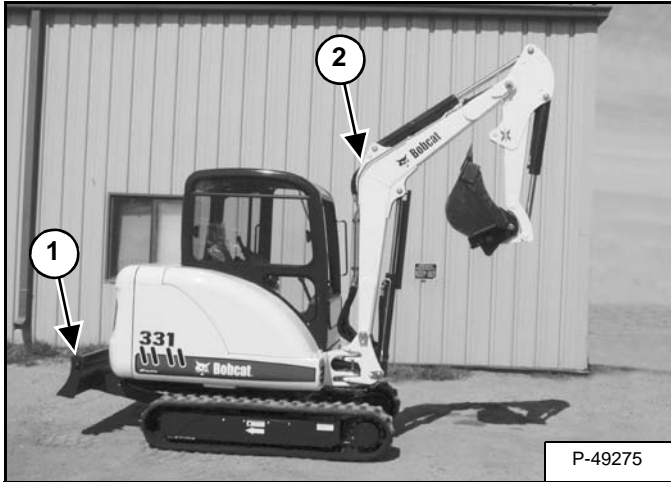
Never use attachments or buckets which are not approved by Bobcat Company. Buckets and attachments for safe loads of specified densities are approved for each model. Unapproved attachments can cause injury or death.

W-2052-0500

## LIFTING THE EXCAVATOR

### Procedure

Figure 10-12-1



Fully extend the cylinders of the bucket, arm, and boom so that the excavator is in the position as shown [Figure 10-12-1].

Raise the blade all the way.

Put all the control levers in neutral.

## WARNING

### AVOID INJURY OR DEATH

- Use a lifting fixture with sufficient capacity for the weight of the excavator plus any added attachments.
- Maintain center of gravity and balance when lifting.
- Do not swing boom or upperstructure. Engage the swing locking lever.
- Never lift with operator on machine.

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Figure 10-12-2

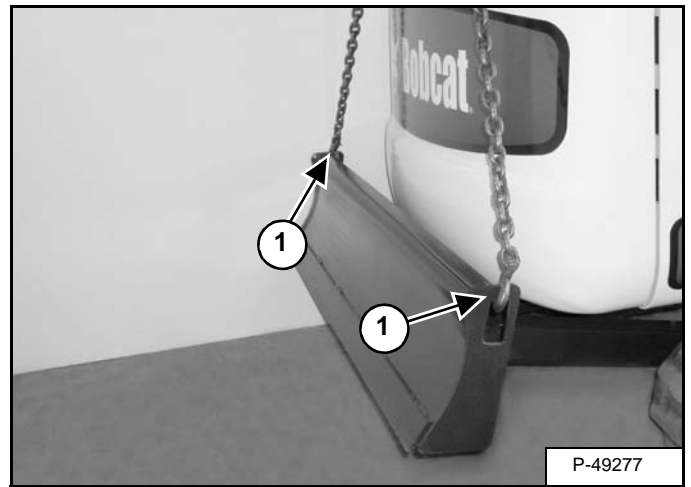
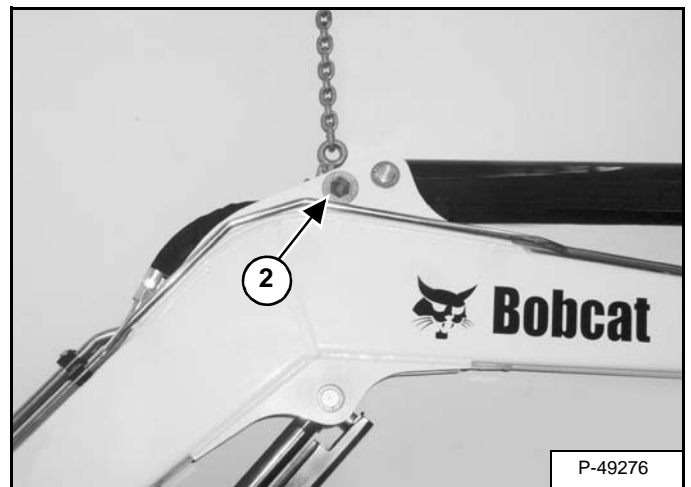


Figure 10-12-3



Fasten chains to the ends of the blade (Item 1) [Figure 10-12-2] and [Figure 10-12-3] and up to a lifting fixture above the canopy/cab. The lifting fixture must extend over the sides of the canopy/cab to prevent the chains from hitting the ROPS/TOPS.

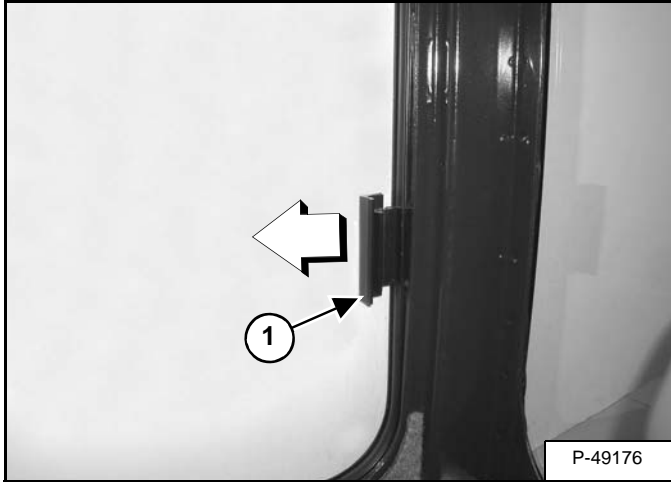
Install a one inch (25 mm) bolt and nut (Grade 5 or 8) through the holes in the boom (Item 2) [Figure 10-12-1] and [Figure 10-12-3]. Fasten a chain from the bolt to the lift fixture.

## OPERATOR CAB (ROPS/TOPS)

### Emergency Exit

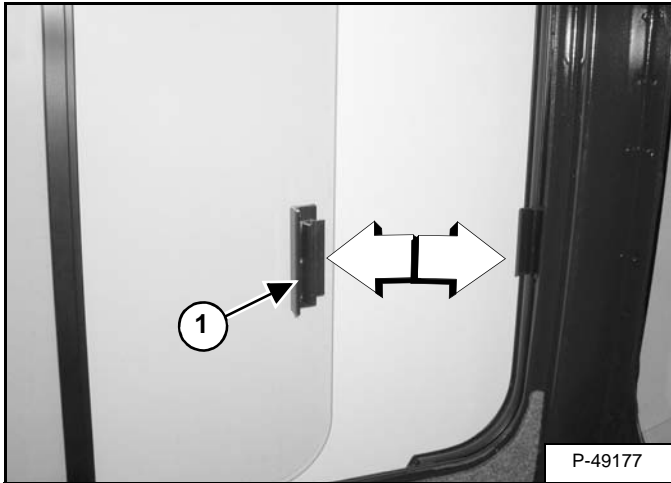
The left door, front window and right rear window provide exits.

**Figure 10-20-1**



Pull forward on the latch (Item 1) [Figure 10-20-1].

**Figure 10-20-2**



Pull the latch/handle (Item 1) [Figure 10-20-2] forward to open the window.

Push the handle back to close the window.

**Figure 10-20-3**



Exit through the window [Figure 10-20-3].

**Figure 10-20-4**

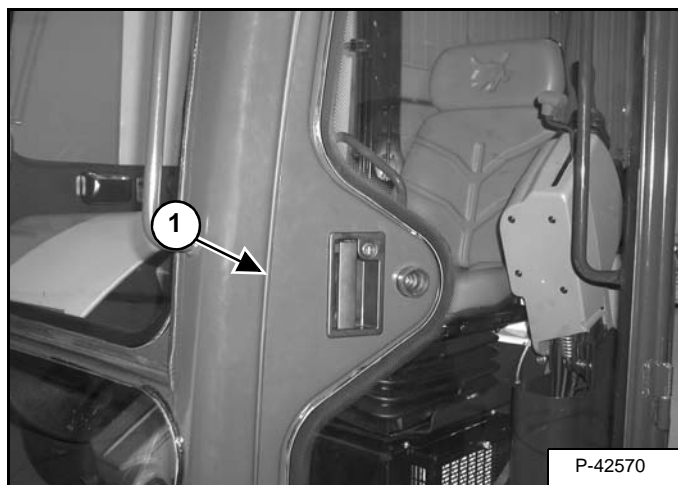


Raise the front window and exit through the window [Figure 10-20-4].

## OPERATOR CAB (ROPS/TOPS) (CONT'D)

### Cab Door

Figure 10-20-5



The cab door (Item 1) [Figure 10-20-5] can be locked with the same key as the starter switch (if equipped).

Push the door all the way open until the latch engages to hold the door in the open position.

Figure 10-20-6



Firmly pull the door away from the cab to disengage the latch and close the door [Figure 10-20-6].

## OPERATOR CAB (ROPS/TOPS) (CONT'D)

### Front Window

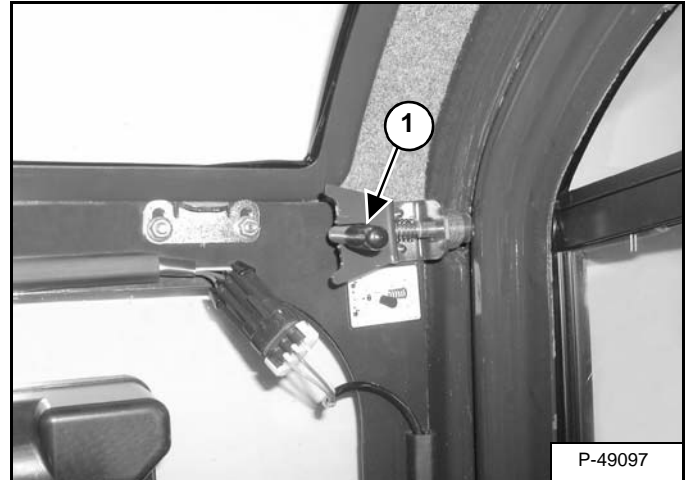
Figure 10-20-7



The front window is equipped with a wiper (Item 1) [Figure 10-20-7] and washer.

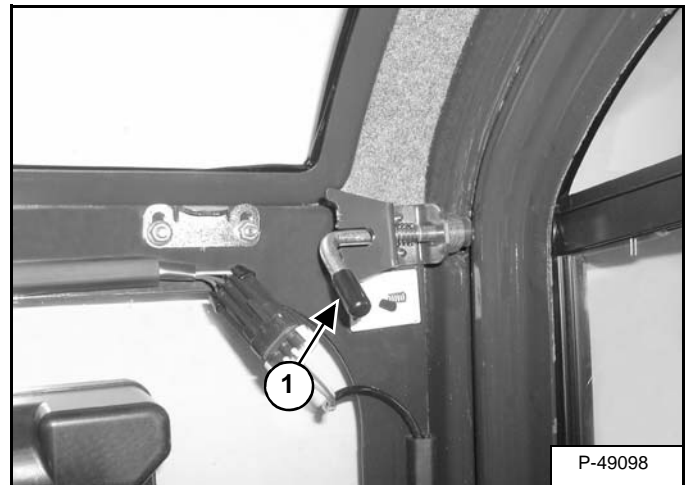
### Opening The Front Window

Figure 10-20-8



Retract the two top window latch pins (Item 1) [Figure 10-20-8].

Figure 10-20-9



Turn the two top latches (Item 1) [Figure 10-20-9] to the unlocked position.

## OPERATOR CAB (ROPS/TOPS) (CONT'D)

### Front Window (Cont'd)

#### Opening The Front Window (Cont'd)

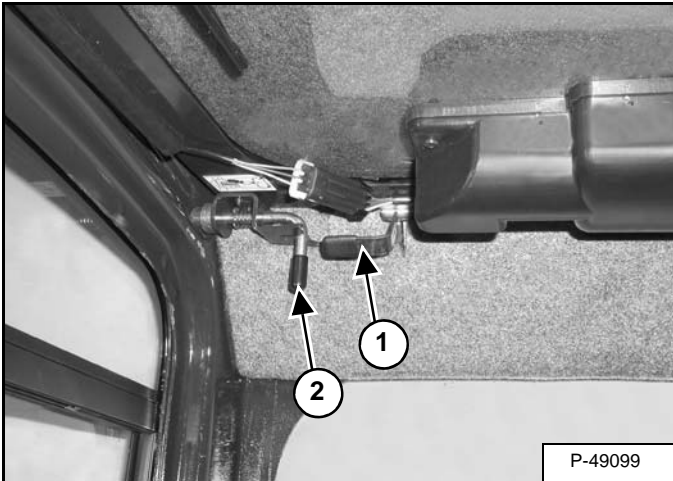
**Figure 10-20-10**



Use both window grab handles to pull the top of the window in **[Figure 10-20-10]**.

Continue moving the window in and up over the operator's head until the window is fully raised.

**Figure 10-20-11**



When the window is fully raised, the latch (Item 1) will close on the bracket. Turn the two top latches (Item 2) **[Figure 10-20-11]** to the locked position.

#### Closing The Front Window

Support the window while releasing both window latch pins and placing the pins in the unlocked position **[Figure 10-20-11]**.

Support the window using the left grab handle and pull down on the latch (Item 1) **[Figure 10-20-11]** to release the window.

Use both window grab handles to pull the window down **[Figure 10-20-10]**.

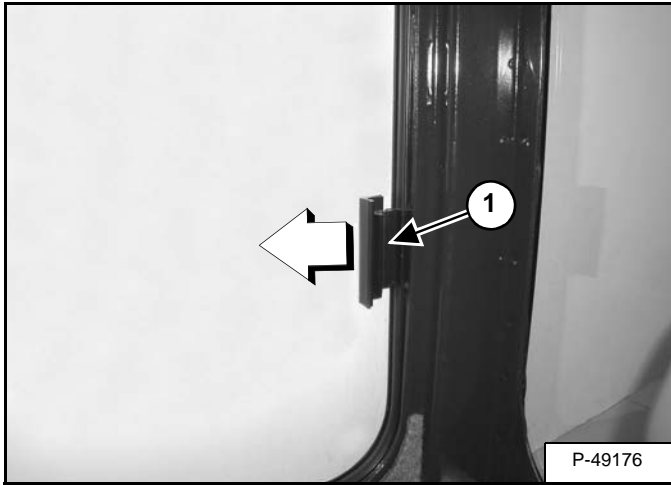
Rotate the top latches (Item 1) **[Figure 10-20-9]** to the locked position (Item 1) **[Figure 10-20-8]**.

## OPERATOR CAB (ROPS/TOPS) (CONT'D)

### Right Side Windows

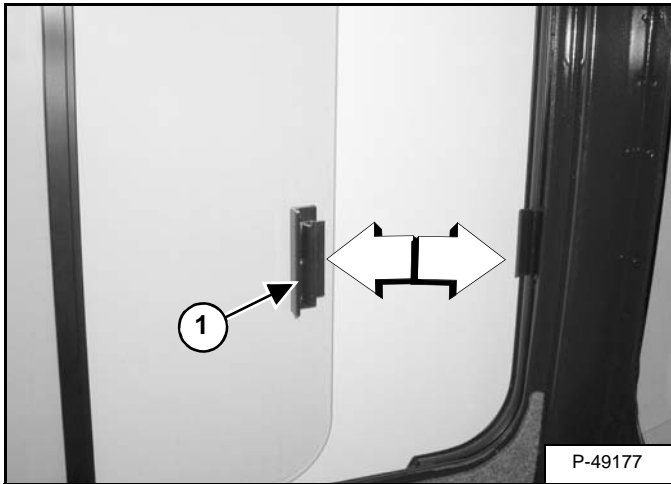
*Opening the right rear window*

**Figure 10-20-12**



Pull out on the latch (Item 1) [Figure 10-20-12].

**Figure 10-20-13**

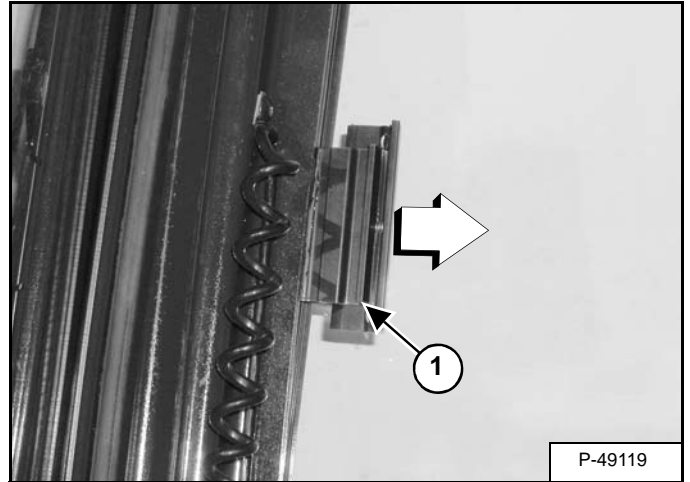


Pull the latch/handle (Item 1) [Figure 10-20-13] forward to open the window.

Push the handle back to close the window.

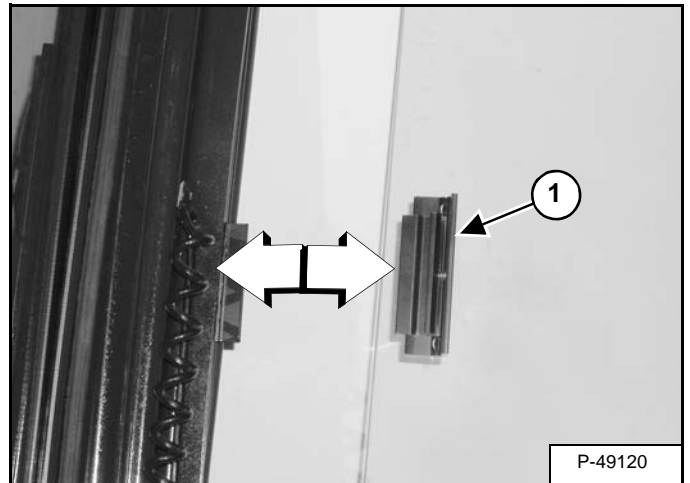
*Opening the right front window*

**Figure 10-20-14**



Pull back on the latch (Item 1) [Figure 10-20-14].

**Figure 10-20-15**



Pull the latch/handle (Item 1) [Figure 10-20-15] back to open the window.

Push the handle forward to close the window.

## TRANSPORTING THE EXCAVATOR

When transporting the machine, observe the rules, motor vehicle laws, and vehicle limit ordinances. Use a transport and towing vehicle of adequate length and capacity.

Secure the parking brakes and block the wheels of the transport vehicle.

Align the ramps with the center of the transport vehicle. Secure the ramps to the truck bed and be sure ramp angle does not exceed 15 degrees.

Use metal loading ramps with a slip resistant surface.

Use ramps that are the correct length and width and can support the weight of the machine.

The rear of the trailer must be blocked or supported when loading or unloading the excavator to prevent the front of the transport vehicle from raising.

Determine the direction of the track movement before moving the machine (blade forward).

Engage the slew lock.

**Figure 10-30-1**



Move the machine forward onto the transport vehicle **[Figure 10-30-1]**.

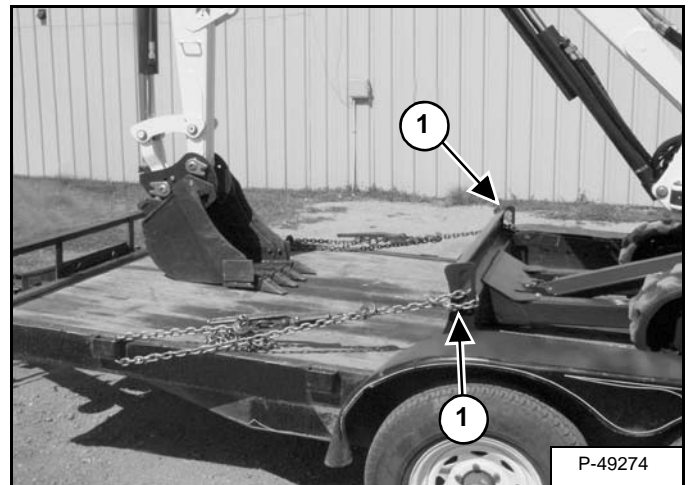
Do not change direction of the machine while it is on the ramps.

Lower the boom, arm, bucket, and blade to the transport vehicle.

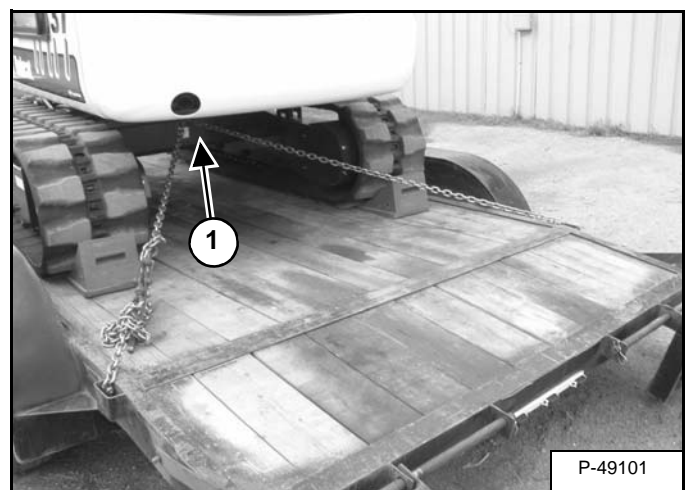
Stop the engine and remove the key (if equipped).

Put blocks at the front and rear of the tracks.

**Figure 10-30-2**



**Figure 10-30-3**



Fasten chains to the front corners of the blade (Item 1) **[Figure 10-30-2]** and to the tie down loop at the rear of the track frame (Item 1) **[Figure 10-30-3]** to prevent it from moving when going up or down slopes or during sudden stops.

Use chain binders to tighten the chains and then safely tie the chain binder levers to prevent loosening.

## **WARNING**

**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.**

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## TAILGATE

### Opening And Closing The Tailgate

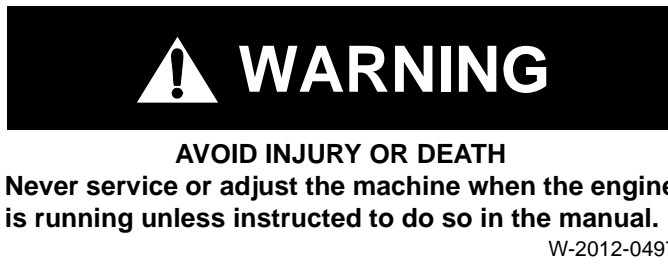
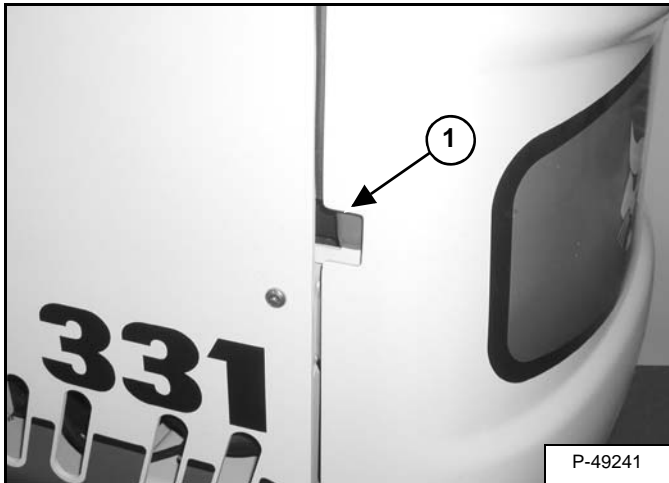


Figure 10-40-1



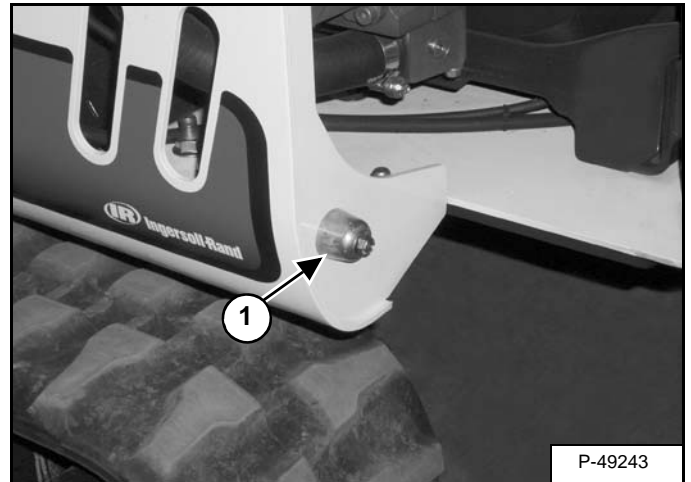
Pull the latch (Item 1) [Figure 10-40-1] and open the tailgate.

Push firmly to close the tailgate.

**NOTE:** The tailgate can be locked using the start key.

## Adjusting The Bumper

Figure 10-40-2

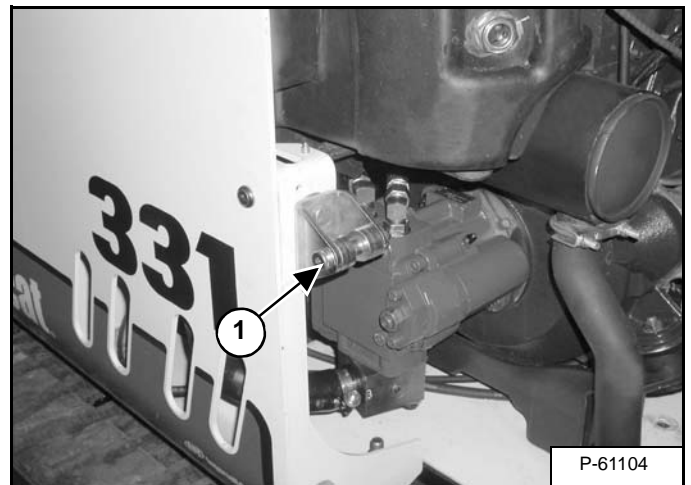


The door bumper (Item 1) [Figure 10-40-2] can be adjusted for alignment with the tailgate.

Close the tailgate before operating the excavator.

## Adjusting The Latch

Figure 10-40-3



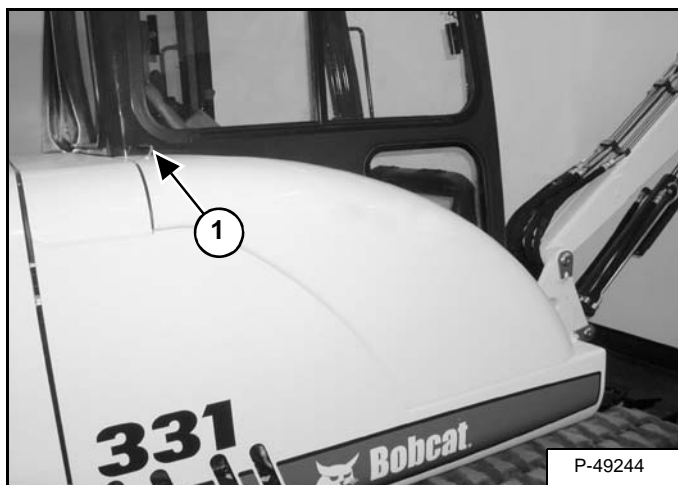
The door catch (Item 1) [Figure 10-40-3] can be adjusted for alignment.

Close the tailgate before operating the excavator.

## RIGHT SIDE COVER

### Opening And Closing The Right Side Cover

Figure 10-41-1



Pull the latch (Item 1) [Figure 10-41-1] and raise the right side cover.

**NOTE:** The right side cover can be locked using the start key.

## 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 Excavator.

# 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 Coolant	Check coolant level. Add premixed coolant as needed.						
Engine Oil	Check the engine oil level and add as needed.						
Hydraulic Fluid, Hoses and Tubelines, Reservoir Breather Cap	Check the hydraulic fluid level and add as needed. Check for damage and leaks. Repair or replace as needed.						
Engine Air Filter and Air System	Check condition indicator and empty dust cup as needed. Check air system for leaks.						
Tracks	Check and adjust track tension as needed.						
Indicators and Lights	Check for correct operation of all indicators and lights.						
Operator Canopy/Cab	Check condition. Check mounting hardware.						
Seat Belt	Check condition. Check mounting hardware.						
Safety Signs and Safety Treads	Check for damaged signs (decals) and safety treads. Replace any signs or safety treads that are damaged or worn.						
Pivot Points	Grease all machinery pivot points.						
Cab Heater Air Filter	Clean the filter as needed.						
Console Lockout	Check console lockout for proper operation.						
X-Change™	Lubricate and inspect for damage or loose parts.						
Swing Circle and Pinion	Grease two fittings						
Fuel Tank & Filter	Drain water and sediment from fuel tank and fuel filter.						
Battery	Check battery, cables, connections and electrolyte level. Add distilled water as needed.						
Accessory Drive Belt	Check condition of belt and adjust as needed.		●				
Spark Arrestor Muffler	Clean the spark chamber.						
Fuel Filter	Replace fuel filter.						
Radiator, Oil Cooler, *A/C	Clean debris from the radiator fins.						
Engine Oil and Filter	Replace oil and filter use CD or better grade oil and Bobcat filter.		●				
Primary Hydraulic Filter	Replace the primary hydraulic filter.			^			
Case Drain Filter	Replace the case drain filter.			^			
Alternator & Starter	Check the alternator and starter connections.						
Engine Valves	Check and adjust the engine valve clearance.						
Engine Cooling System	Drain and flush the cooling system. Replace the coolant.						
Hydraulic System	Replace the hydraulic fluid and filters. Clean the reservoir.						
Travel Motor	Replace the lubricant in both travel motors.						

\* If Equipped

● Also at *first* 50 Hours

^ Also at *first* 100 Hours

■ Or every 6 months.



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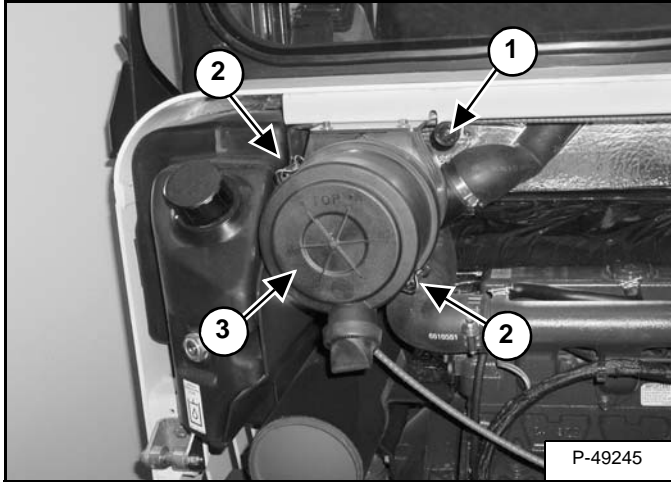
**Thank you so much for reading**

## AIR CLEANER SERVICE

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 10-50-1.)

### Daily Check

Figure 10-60-1



Check the condition indicator (Item 1) [Figure 10-60-1]. If the red ring shows in the condition indicator, the filter needs to be replaced.

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

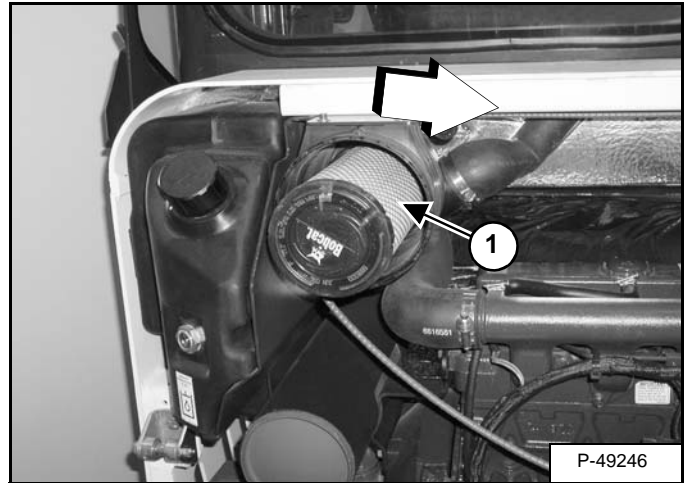
## Replacing The Filters

### Outer Filter

Release the two fasteners (Item 2) [Figure 10-60-1].

Remove and clean the dust cup (Item 3) [Figure 10-60-1].

Figure 10-60-2



Pull the outer filter (Item 1) [Figure 10-60-2] from the air cleaner housing.

Check the housing for damage.

Clean the housing and the seal surface. DO NOT use compressed air.

Install a new filter.

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