



# Bobcat®

## Service Manual

---



### **E17z**

## Compact Excavator

S/N B4ZM11001 & Above





# MAINTENANCE SAFETY



## WARNING

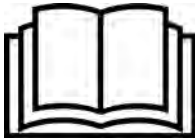
Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual, Operator's Handbook and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after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

W-2003-0807



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

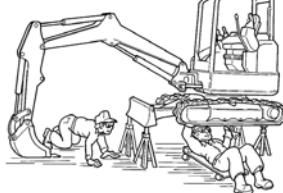
### CORRECT



P-90216

- Never service the Bobcat Compact Excavator without instructions.

### CORRECT



NA1428

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

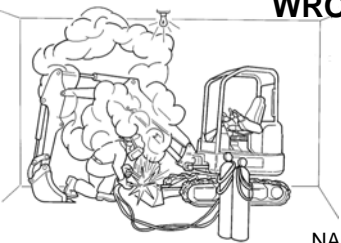
### CORRECT



NA1425

- Cleaning and maintenance are required daily.

### WRONG



NA1427

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

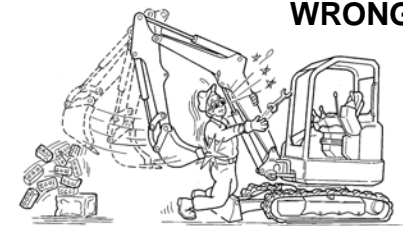
### WRONG



NA1426

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

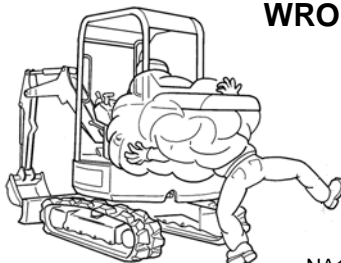
### WRONG



NA1429

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

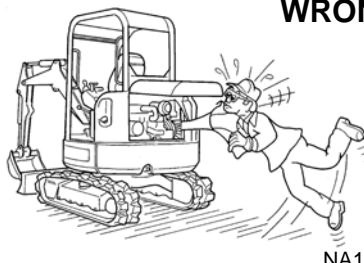
### WRONG



NA1430

- 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.

### WRONG



NA1431

- 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 tailgate closed except for service. Close and latch tailgate before operating the excavator.

### WRONG



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.

MSW38-0409



**Bobcat®**

## CONTENTS

SAFETY & MAINTENANCE .....	10-01
HYDRAULIC SYSTEM .....	20-01
UNDERCARRIAGE .....	30-01
UPPERSTRUCTURE & SWING .....	40-01
ELECTRICAL SYSTEM .....	50-01
ENGINE .....	60-01
HEATING AND VENTILATION .....	70-01
SPECIFICATIONS .....	SPEC-01
ALPHABETICAL INDEX .....	INDEX-01



**Bobcat®**

## FOREWORD

FOREWORD .....	1-7
SAFETY INSTRUCTIONS .....	1-9
Avoid Silica Dust .....	1-9
FIRE PREVENTION .....	1-10
Maintenance .....	1-10
Operation .....	1-10
Electrical .....	1-10
Hydraulic System .....	1-10
Fueling .....	1-10
Starting .....	1-10
Spark Arrester Exhaust System .....	1-10
Welding And Grinding .....	1-11
Fire Extinguishers .....	1-11
SERIAL NUMBER LOCATIONS .....	1-12
Excavator Serial Number .....	1-12
Engine Serial Number .....	1-12
DELIVERY REPORT .....	1-13
EXCAVATOR IDENTIFICATION .....	1-14



**Bobcat®**

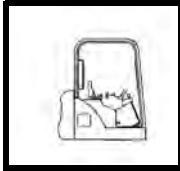


# FOREWORD

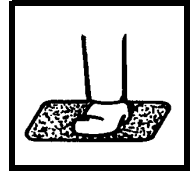
This manual is for the Bobcat excavator mechanic. It provides necessary servicing and adjustment procedures for the Bobcat excavator and its component parts and systems. Refer to the Operation & Maintenance Manual for operating instructions, starting procedure, daily checks, etc.

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

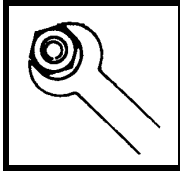
1. Check that the ROPS/TOPS/FOPS is in good condition and is not modified.



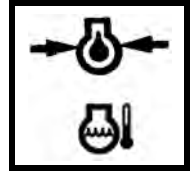
9. Safety treads must be in good condition.



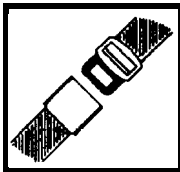
2. Check that ROPS/TOPS mounting hardware is tightened and is Bobcat approved.



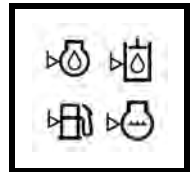
10. Check for correct function of indicator lamps.



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



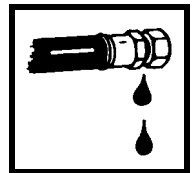
11. Check all machine fluid levels.



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



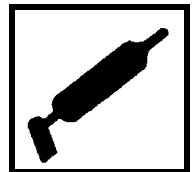
12. Inspect for fuel, oil or hydraulic fluid leaks.



5. Travel levers, control levers and foot pedals must return to neutral. Check that the pedal locks are in working order.



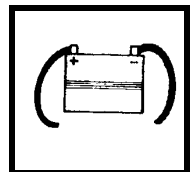
13. Lubricate the excavator.



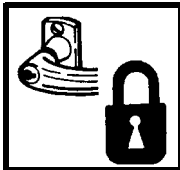
6. Check for correct function of the work lights.



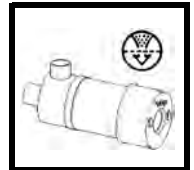
14. Check the condition of the battery and cables.



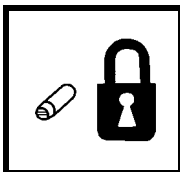
7. Enclosure door latches must open and close freely.



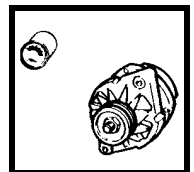
15. Inspect the air cleaner for damage or leaks. Check the condition of the element.



8. Attachment locking pins must function correctly and be in good condition.

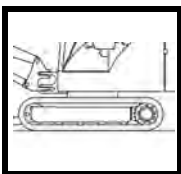


16. Check the electrical charging system.



FW EXC-0119 SM

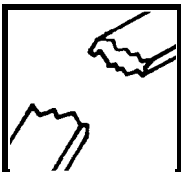
17. Check tracks for wear and tension. Use only approved tracks.



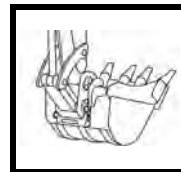
21. Check the control console interlocks for correct function.



18. Inspect for loose or broken parts or connections.



22. Inspect the X-Change™ for wear or damage. Repair or replace damaged parts.



19. Check for any field modification not completed.



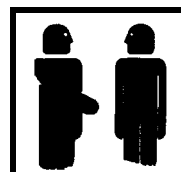
23. Check function or condition of all equipped options and accessories (examples: special applications kit, motion alarm, etc.).



20. Operate the machine and check all functions.



24. 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

### 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

## 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 Service Manual and Parts Manual are available from your dealer for use by mechanics to do shop-type service and repair work.

The dealer and owner / operator review the recommended uses of the product when delivered. If the owner / operator will be using the machine for a different application(s) he or she must ask the dealer for recommendations on the new use.

### Avoid Silica Dust



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

SI EXC EMEA-1114 SM

## 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 petrol 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.

Ultra Low Sulfur Diesel (ULSD) poses a greater static ignition hazard than earlier diesel formulations with higher Sulfur content. Avoid death or serious injury from fire or explosion. Consult with your fuel or fuel system supplier to ensure the delivery system is in compliance with fueling standards for proper grounding and bonding practices.

### Starting

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

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

### Spark Arrester Exhaust System

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

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

## **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 excavator when requesting service information or when ordering parts. Earlier 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.

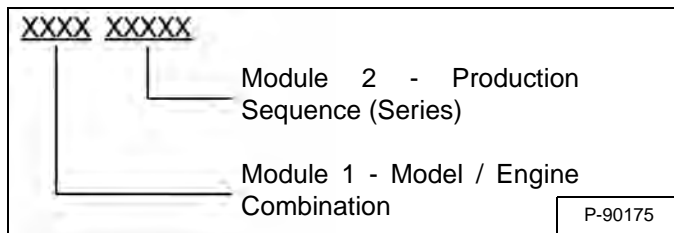
### Excavator Serial Number

Figure 1



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

Figure 2

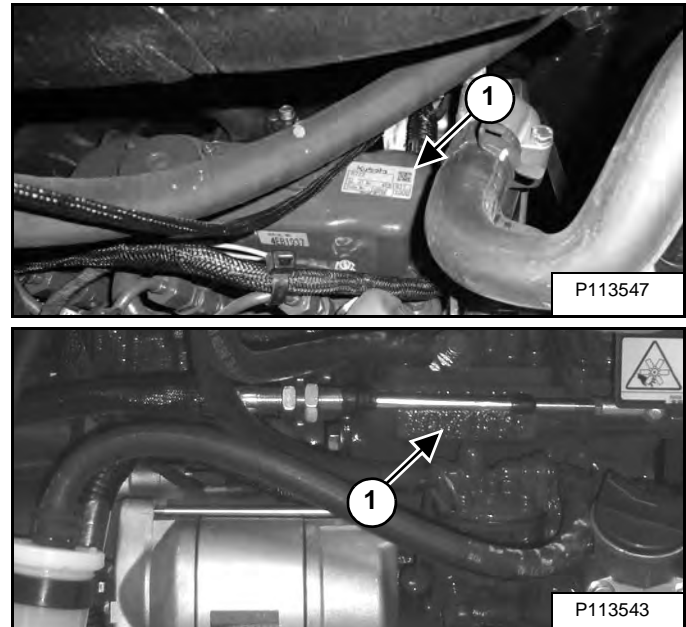


Explanation of excavator Serial Number [Figure 2]:

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 3



The engine serial number is located on the top cover (Item 1) or on the side of the engine block (Item 2) [Figure 3] above the fuel pump.

DELIVERY REPORT

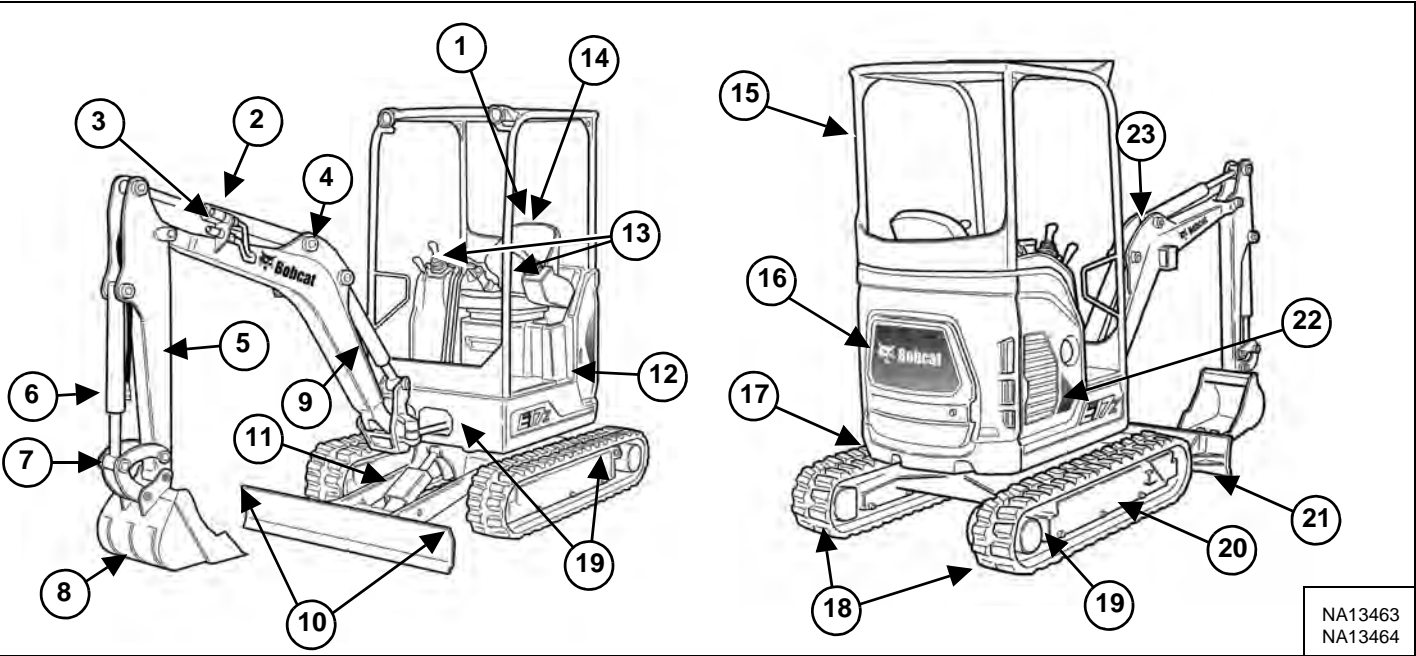
Figure 4

The diagram shows a form layout for a delivery report. It includes a title 'DELIVERY REPORT' at the top right, a 'WARNING' section on the left, and a reference code 'B-16315' at the bottom right.

The delivery report [Figure 4] contains a list of items that must be explained or shown to the owner or operator by the dealer when the Bobcat excavator is delivered.

The delivery report must be reviewed and signed by the owner or operator and the dealer.

EXCAVATOR IDENTIFICATION



ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	Operator's Handbook	15	Canopy (ROPS / TOPS) [B]
2	Arm Cylinder	16	Rear Cover
3	Auxiliary Quick Couplers	17	Counterweight
4	Boom	18	Tracks
5	Arm	19	Tie-Downs (Both Sides)
6	Bucket Cylinder	20	Track Frames
7	Bucket Link	21	Blade
8	Bucket [A]	22	Right Side Cover
9	Boom Cylinder	23	Lift Point
10	Tie-Downs / Lift Points		
11	Blade Cylinder		
12	Upperstructure		
13	Control Levers (Joysticks)		
14	Operator's Seat with Seat Belt		

[A] BUCKET - Several different buckets and other attachments are available for the Bobcat excavator.

[B] ROPS, TOPS - (Roll-Over Protective Structure / Tip-Over Protective Structure) as standard equipment.  
The ROPS / TOPS meets ISO 12117-2 AND ISO 12117.



## SAFETY & MAINTENANCE

LIFTING AND BLOCKING THE EXCAVATOR .....	10-10-1
Procedure .....	10-10-1
LIFTING THE EXCAVATOR .....	10-20-1
Procedure .....	10-20-1
OPERATOR CAB (ROPS / TOPS) .....	10-30-1
Description .....	10-30-1
Cab Door .....	10-30-2
Front Window .....	10-30-3
Front Wiper .....	10-30-4
Window Washer Reservoir .....	10-30-4
Right Side Window .....	10-30-5
Heating And Ventilation Ducting .....	10-30-5
OPERATOR CANOPY (ROPS / TOPS / FOPS) .....	10-31-1
Description .....	10-31-1
TRANSPORTING THE EXCAVATOR ON A TRAILER .....	10-40-1
Loading And Unloading .....	10-40-1
Fastening .....	10-40-2
TAILGATE .....	10-50-1
Opening And Closing .....	10-50-1
Adjusting the Latch .....	10-50-2
RIGHT SIDE COVER .....	10-60-1
Opening And Closing .....	10-60-1
SERVICE SCHEDULE .....	10-70-1
Maintenance Intervals .....	10-70-1
AIR CLEANER SERVICE .....	10-80-1
Daily Check .....	10-80-1
Replacing The Filters .....	10-80-1
CAB FILTER .....	10-90-1
Cleaning And Maintenance .....	10-90-1
ENGINE COOLING SYSTEM .....	10-100-1
Cleaning .....	10-100-1
Checking Coolant Level .....	10-100-2
Removing And Replacing Coolant .....	10-100-3

FUEL SYSTEM .....	10-110-1
Fuel Specifications .....	10-110-1
Biodiesel Blend Fuel .....	10-110-1
Filling The Fuel Tank .....	10-110-2
Fuel Filter .....	10-110-3
Draining The Fuel Tank .....	10-110-4
Removing Air From The Fuel System .....	10-110-5
ENGINE LUBRICATION SYSTEM .....	10-120-1
Checking And Adding Engine Oil .....	10-120-1
Engine Oil Chart .....	10-120-1
Removing And Replacing Oil And Filter .....	10-120-2
HYDRAULIC SYSTEM .....	10-130-1
Checking And Adding Hydraulic Fluid .....	10-130-1
Hydraulic / Hydrostatic Fluid Chart .....	10-130-2
Removing And Replacing The Hydraulic Filters .....	10-130-2
Removing And Replacing The Hydraulic Oil .....	10-130-3
LUBRICATING THE EXCAVATOR .....	10-140-1
Lubrication Locations .....	10-140-1
TRAVEL MOTOR .....	10-150-1
Checking And Adding Fluid .....	10-150-1
Removing And Replacing Fluid .....	10-150-1
SPARK ARRESTER MUFFLER .....	10-160-1
Cleaning Procedure .....	10-160-1
ALTERNATOR BELT .....	10-170-1
Belt Adjustment .....	10-170-1
Belt Replacement .....	10-170-1
SEAT BELT .....	10-180-1
Inspection And Maintenance .....	10-180-1
CONTROL CONSOLE LOCKOUTS .....	10-190-1
Inspection And Maintenance .....	10-190-1
PIVOT PINS .....	10-200-1
Inspection And Maintenance .....	10-200-1
TOWING THE EXCAVATOR .....	10-210-1
Procedure .....	10-210-1
EXCAVATOR STORAGE AND RETURN TO SERVICE .....	10-220-1
Storage .....	10-220-1
Return To Service .....	10-220-1

## LIFTING AND BLOCKING THE EXCAVATOR

### Procedure

Always park the machine on a level surface.

# ! 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

# ! WARNING

Put jackstands under the blade and rear corners of the undercarriage before working under the machine. Failure to block up the machine may allow it to move or fall and result in injury or death.

W-2218-1195

Figure 10-10-1

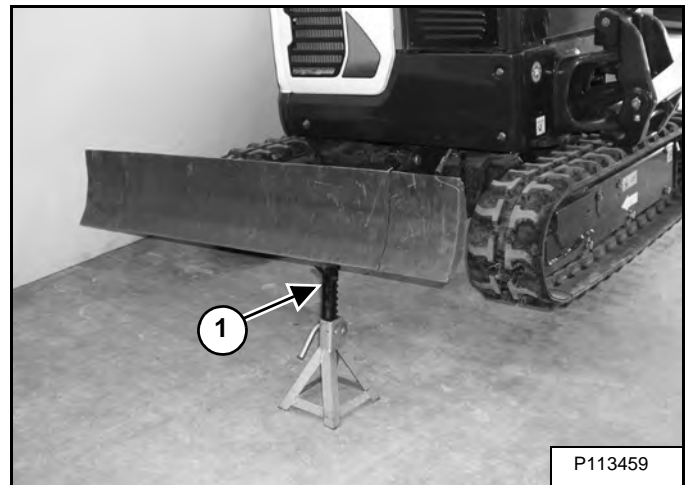
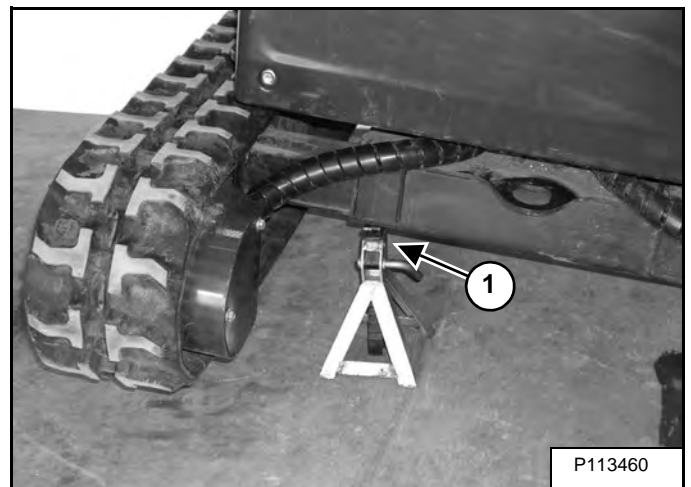


Figure 10-10-2



Raise one side of the machine (approximately 101,6 mm (4 in) using the boom and arm [Figure 10-10-1] and [Figure 10-10-2].

Raise the blade fully and install jack stands under the blade and track frame (Item 1) [Figure 10-10-1] and [Figure 10-10-2]. Raise the boom until all machine weight is on the jack stands.

Repeat the procedure for the other side.

Stop the engine.



**Bobcat®**

## LIFTING THE EXCAVATOR

### Procedure

Figure 10-20-1



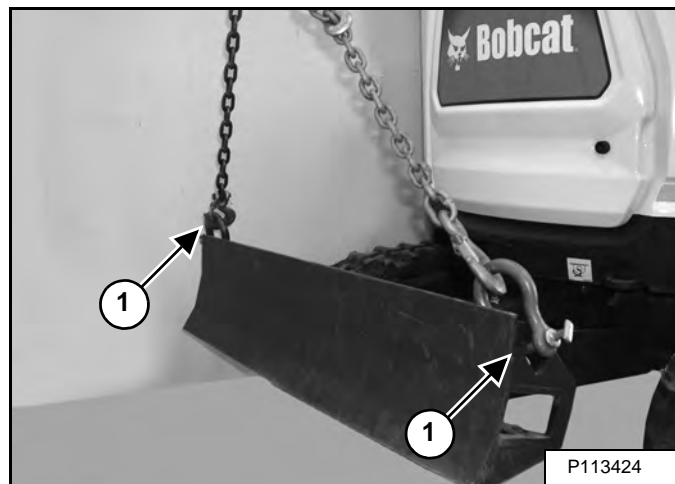
Fully extend the cylinders of the bucket, arm, and boom.

Raise the blade fully.

Turn the upperstructure so the boom and blade are at opposite ends of the excavator as shown in **[Figure 10-20-1]**.

Put all the control levers in NEUTRAL and stop the machine.

Figure 10-20-2



Fasten chains to the ends of the blade (Item 1) **[Figure 10-20-2]** 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 canopy / cab.

## WARNING

### AVOID INJURY OR DEATH

- Use chains and lifting equipment with sufficient capacity for the weight of the excavator plus any added attachments.
- Maintain centre of gravity and balance when lifting.
- Do not swing boom or upperstructure.
- Never lift with operator on machine.
- Never lift with the blade angled (if equipped).

W-2800-EN-0210

## LIFTING THE EXCAVATOR

### Procedure

Figure 10-20-3

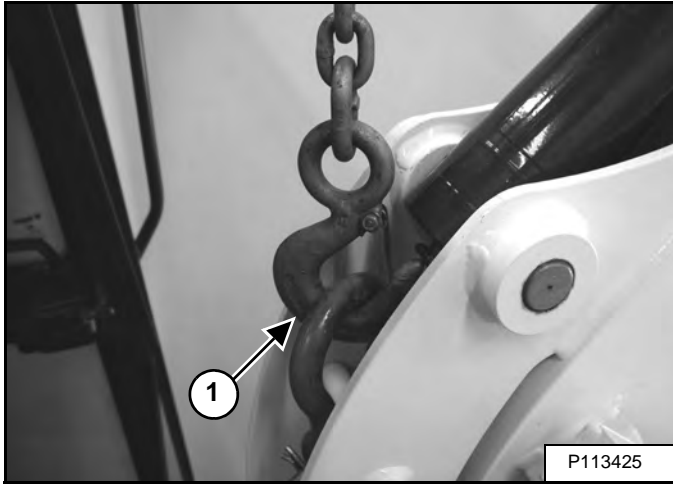
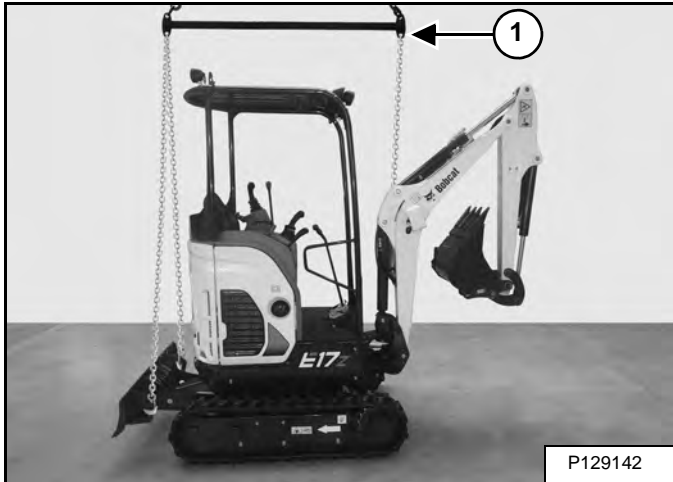


Figure 10-20-4



Fasten a chain (Item 1) [Figure 10-20-3] from the boom to the lift fixture (Item 1) [Figure 10-20-4].

Keep the following in mind:

- The excavator should remain as close to horizontal as possible.
- To prevent damage, the chains should not contact any part of the canopy / cab.
- Depending on the type of chain hooks, it may be necessary to install a clevis at the lift points and then hook to the clevis.

## OPERATOR CAB (ROPS / TOPS)

### Description

The Bobcat excavator has an operator cab (ROPS / TOPS) as standard equipment to protect the operator if the excavator is tipped over or from falling objects. The seat belt must be worn for ROPS / TOPS protection.

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

Roll-Over Protective Structure (ROPS) per ISO 12117-2, Tip-Over Protective Structure (TOPS) per ISO 12117.



**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



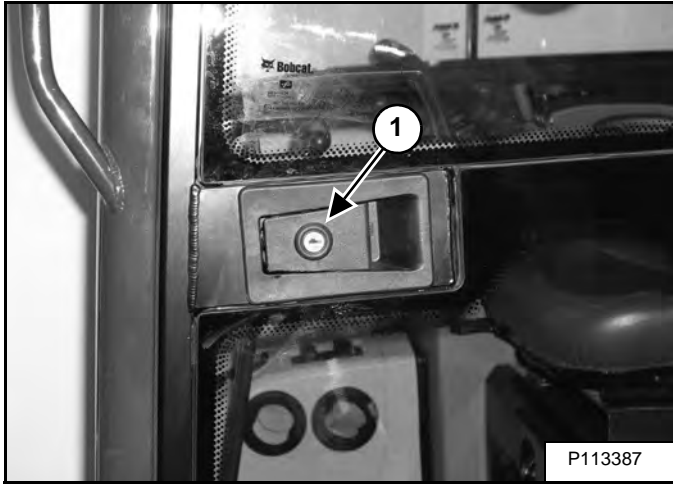
**Never modify operator cab by welding, grinding, drilling holes or adding attachments unless instructed to do so by Bobcat Company. Changes to the cab can cause loss of operator protection from rollover and falling objects, and result in injury or death.**

W-2069-0200

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

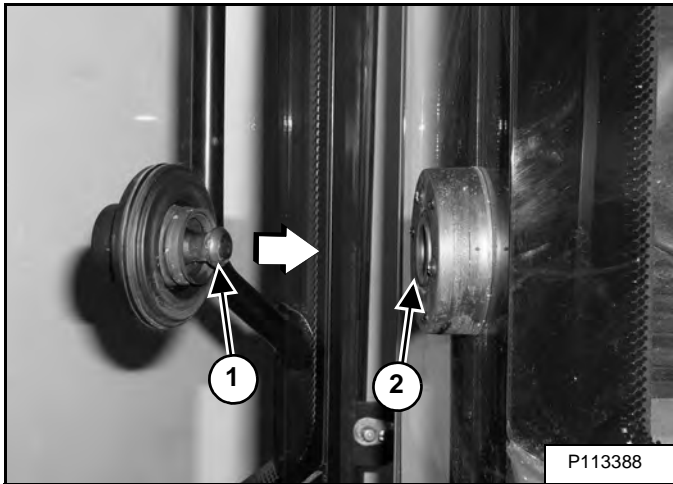
### Cab Door

Figure 10-30-1



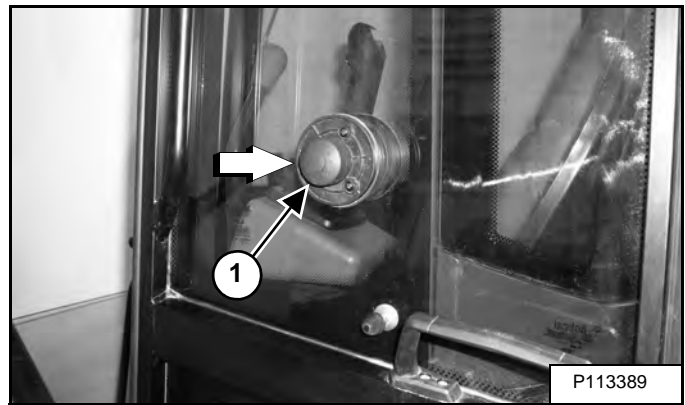
The cab door can be locked (Item 1) [Figure 10-30-1] with the same key as the starter switch. Pull on the latch to open the door.

Figure 10-30-2



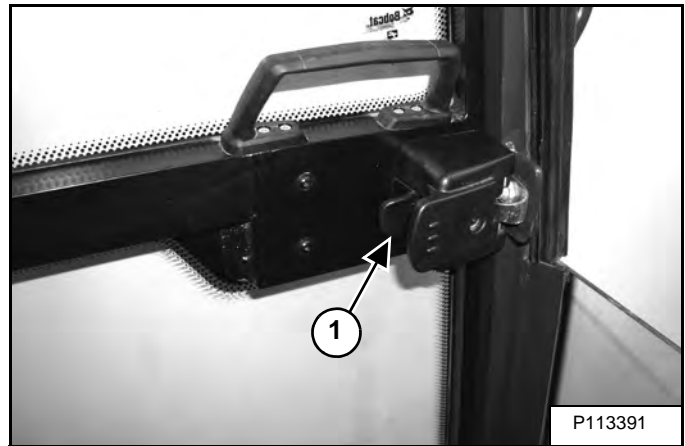
Push the door all the way open until the latch post (Item 1) engages in the latch (Item 2) [Figure 10-30-2] to hold the door in the open position.

Figure 10-30-3



When the door is in the open position, push on the latch (Item 1) [Figure 10-30-3] and close the door.

Figure 10-30-4



From inside the cab, open the door using the handle (Item 1) [Figure 10-30-4] and close the door.

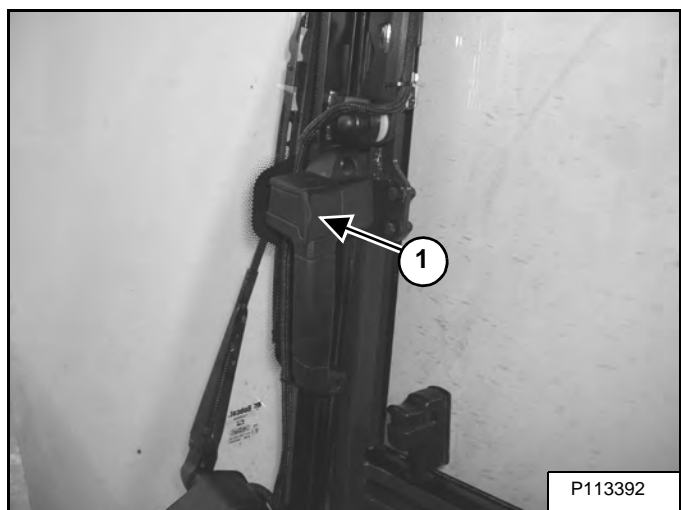


## OPERATOR CAB (ROPS / TOPS) (CONT'D)

### Front Window

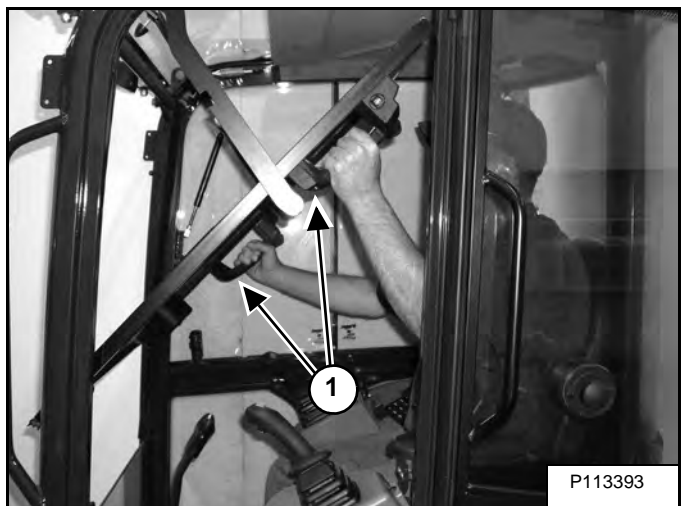
#### *Opening The Front Window*

**Figure 10-30-5**



Press the window latch buttons (Item 1) **[Figure 10-30-5]** on both sides.

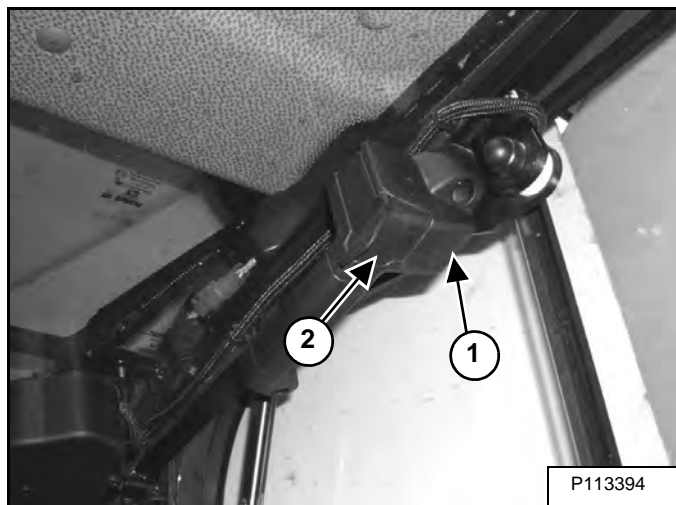
**Figure 10-30-6**



Use both window grab handles (Item 1) **[Figure 10-30-6]** to pull the top of the window in.

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

**Figure 10-30-7**



When the window is fully raised, the latch (Item 1) **[Figure 10-30-7]** (both sides) will close on the bracket in the latched position.

Pull down and forward slightly on the window to make sure it is fully latched.

#### *Closing The Front Window*

Use both window grab handles to support the window while pressing the window latch button (Item 2) **[Figure 10-30-7]** (both sides).

Use both window grab handles (Item 1) **[Figure 10-30-6]** to pull the window down fully.

Press the top of the window in until the latch locks into the latched position (both sides) **[Figure 10-30-5]**.

Pull inward and upward slightly on the window to make sure it is fully latched in the closed position.

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

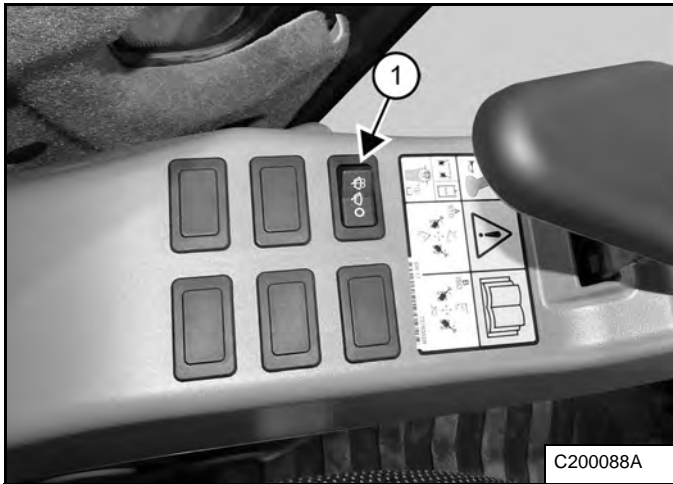
### Front Wiper

Figure 10-30-8



The front window is equipped with a windshield wiper (Item 1) [Figure 10-30-8] and washer.

Figure 10-30-9



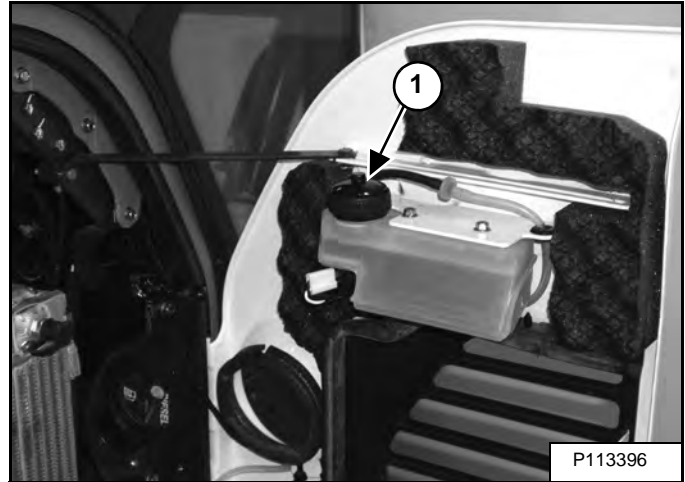
Press the switch (Item 1) [Figure 10-30-8] to the left to turn the windshield wiper ON.

Press and hold switch (Item 1) [Figure 10-30-8] to the left to activate windshield wiper.

Press the switch (Item 1) [Figure 10-30-8] to the right to turn the windshield wiper OFF.

### Window Washer Reservoir

Figure 10-30-10



The window washer reservoir (Item 1) [Figure 10-30-10] is located on the right side cover.

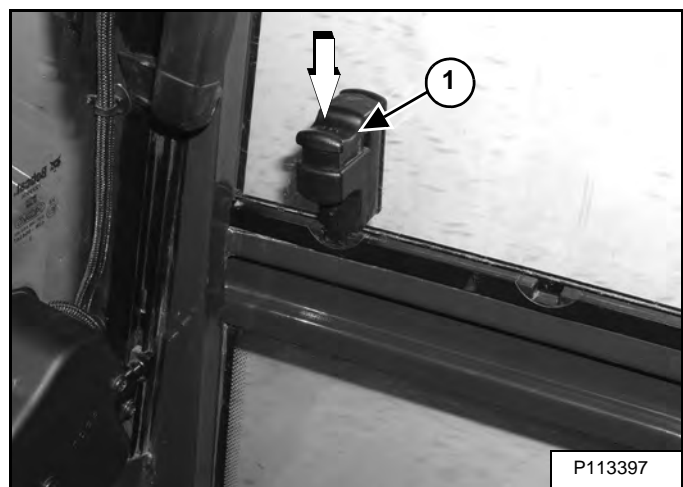
**NOTE:** When temperatures are to reach below freezing, use a washer fluid that is recommended for use in cold temperatures to avoid damage to the washer reservoir.

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

### Right Side Window

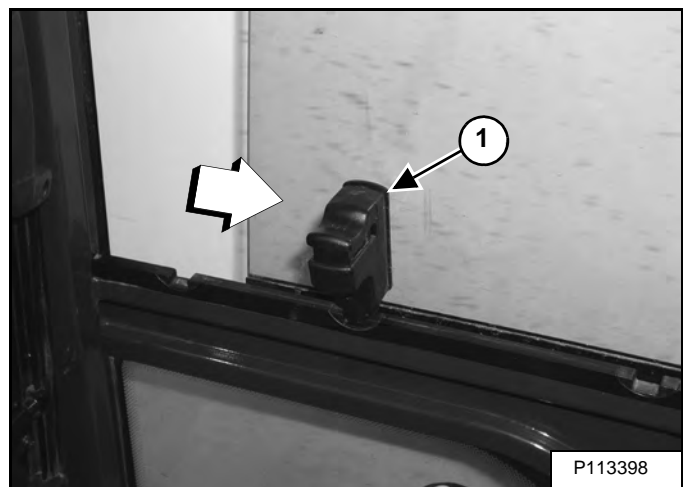
#### *Opening The Right Front Window*

**Figure 10-30-11**



Press down on the latch (Item 1) [Figure 10-30-11] located at the front of the front window.

**Figure 10-30-12**



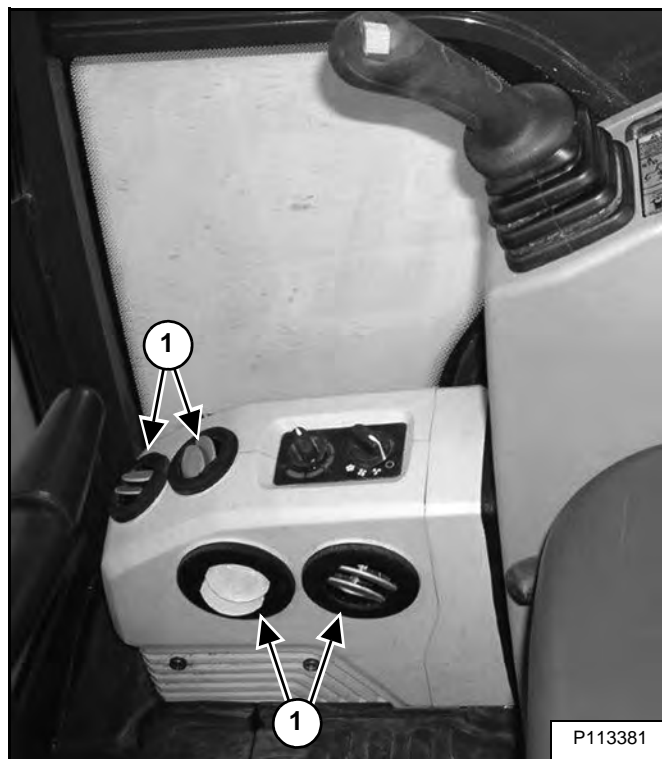
Pull the latch (Item 1) [Figure 10-30-12] backward to open the window until the desired stop. Release the latch and latch the window in place.

#### *Closing The Right Front Window*

Press down on the latch (Item 1) [Figure 10-30-11] and push the latch forward to close the window.

## Heating And Ventilation Ducting

**Figure 10-30-13**



The heating and ventilation louvers (Item 1) [Figure 10-30-13] can be positioned as needed to direct the air flow to various areas in the cab.



**Bobcat®**

## **OPERATOR CANOPY (ROPS / TOPS / FOPS)**

### **Description**

The Bobcat excavator has an operator canopy (ROPS / TOPS / FOPS) as standard equipment to protect the operator if the excavator is tipped over. The seat belt must be worn for ROPS / TOPS protection.

Check the ROPS / TOPS / FOPS canopy, mounting, and hardware for damage. Never modify the ROPS / TOPS / FOPS canopy. Replace the canopy and hardware if damaged. See your dealer for parts.

ROPS - Roll-Over Protective Structure per ISO 12117-2:2008.

TOPS - Tip-Over Protective Structure per ISO 12117:2000, EN13531:2001.

FOPS - Falling-Object Protective Structure per ISO 10262:1998 - Meets Level 1.



**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



**Bobcat®**

## TRANSPORTING THE EXCAVATOR ON A TRAILER

### Loading And Unloading

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 machine to prevent the front of the transport vehicle from raising.

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

Disengage the auto idle feature and move the two-speed travel to the low range position.

Figure 10-40-1



Move the machine forward onto the transport vehicle [Figure 10-40-1].

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.



## 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.

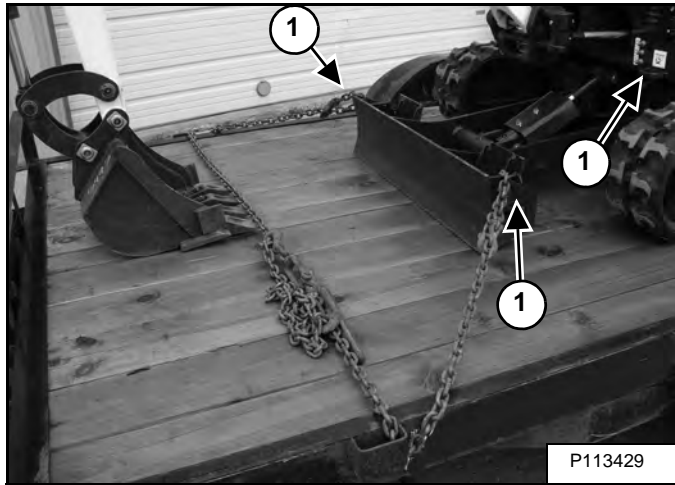
W-2058-0807

## TRANSPORTING THE EXCAVATOR ON A TRAILER (CONT'D)

### Fastening

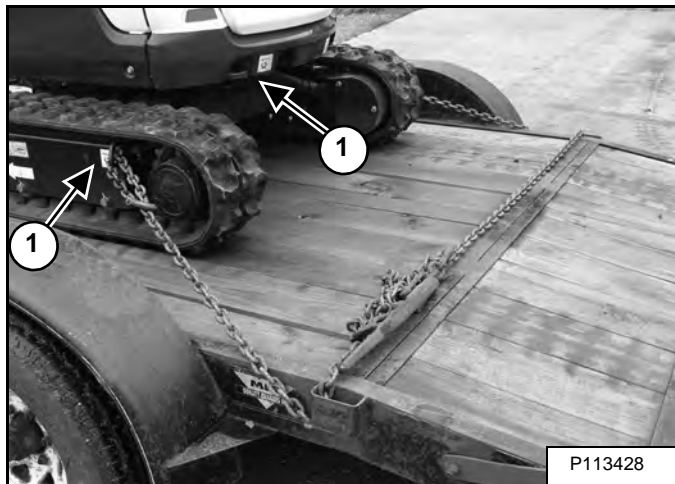
Tie-down the excavator to prevent it from moving when going up or down slopes or during sudden stops. Use chain binders to tighten the chains and then safely tie the chain binder levers to prevent loosening.

**Figure 10-40-2**



At the front of the machine, fasten chains to the corners of the blade (Item 1) **[Figure 10-40-2]** OR fasten chains to the tie-down loops on both sides of the front upperstructure (Item 1) **[Figure 10-40-2]**.

**Figure 10-40-3**



At the rear of the machine, fasten chains to the tie-down loops on the exterior of the track (Item 1) **[Figure 10-40-3]** OR fasten chains to the tie-down loops at the back of the machine (Item 1).

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



## TAILGATE

### Opening And Closing

# WARNING

#### AVOID INJURY OR DEATH

Never service or adjust the machine when the engine is running unless instructed to do so in the manual.

W-2012-0497

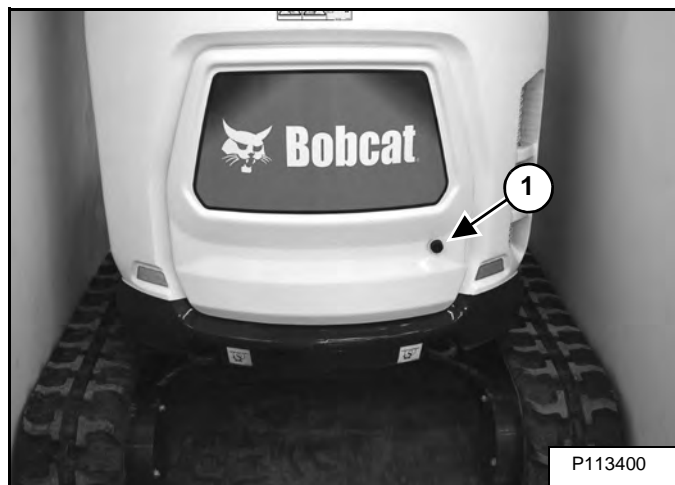
# WARNING

Keep the rear door closed when operating the machine. Failure to do so could seriously injure a bystander.

W-2020-1285

The tailgate can be locked and unlocked using the start key.

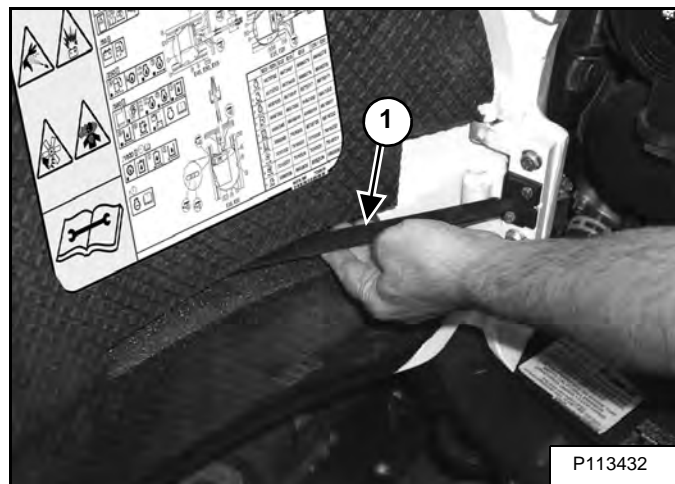
**Figure 10-50-1**



Press the button (Item 1) [Figure 10-50-1] and pull the tailgate open.

Open the tailgate and rotate outward until it is held open by the latch (Item 1) [Figure 10-50-2].

**Figure 10-50-2**



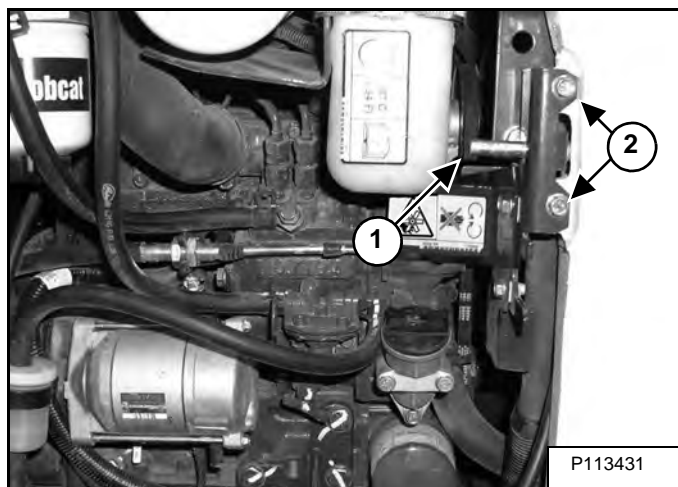
To close the tailgate, lift up on the latch (Item 1) [Figure 10-50-2] and slowly start to close the tailgate.

Push firmly to close the tailgate.

## TAILGATE (CONT'D)

### Adjusting the Latch

Figure 10-50-3

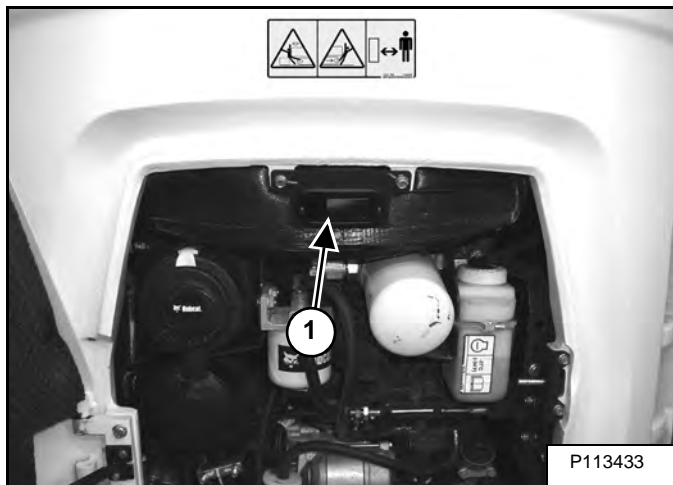


To close the tailgate, lift up on the latch (Item 1) **[Figure 10-50-2]** and slowly start to close the tailgate.

## RIGHT SIDE COVER

### Opening And Closing

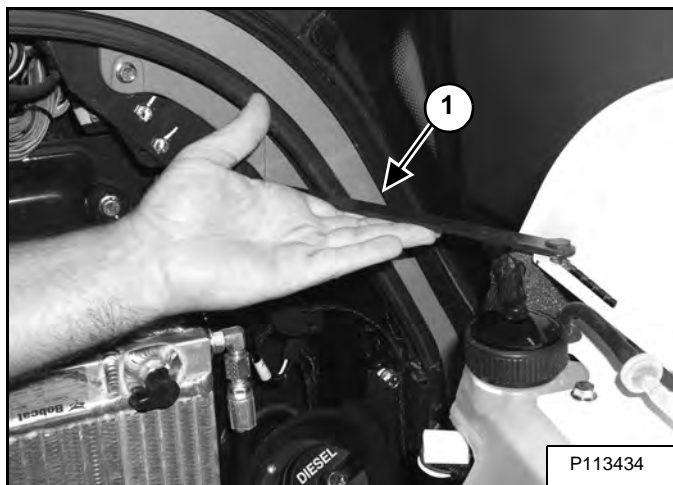
Figure 10-60-1



Open the tailgate to access the right side cover latch (Item 1) [Figure 10-60-1].

Pull out the lever (Item 1) [Figure 10-60-1] and open the right side cover.

Figure 10-60-2



Open the right side cover and rotate forward until it is held open by the latch (Item 1) [Figure 10-60-2].

To close the tailgate, lift up on the latch (Item 1) [Figure 10-60-2] and slowly start to close the tailgate.



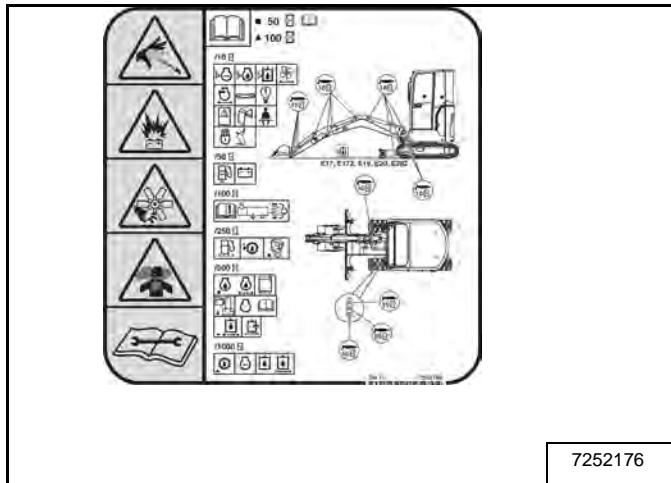
**Bobcat®**

## SERVICE SCHEDULE

### Maintenance Intervals

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. See the inside page of the back cover for symbols and identification.



#### *Every 10 Hours (Before Starting The Excavator)*

- **Engine Oil** - Check level and add as needed.
- **Engine Air Filters and Air System** - Check air clearer condition indicator. Service only when required. Check for leaks and damaged components.
- **Engine Cooling System** - Check coolant level cold and add premixed coolant as needed.
- **Fuel Filters** - Check filters for moisture or contamination. Drain and replace as needed.
- **Hydraulic Fluid** - Check fluid level and add as needed.
- **Seat Belt, Seat Belt Retractors, Seat Belt Mounting Hardware, Control Console Lockout** - Check the condition of seat belt and mounting hardware. Clean or replace seat belt retractors as needed. Check the control console lockout lever for proper operation. Clean dirt and debris from moving parts.
- **Motion Alarm and Horn (if equipped)** - Check for proper function.
- **Operator Canopy / Cab** - Check the canopy / cab condition and mounting hardware.
- **Operator Cab Heater Filters** - Clean filters (if equipped).
- **Indicators and Lights** - Check for correct operation of all indicators and lights.
- **Safety Signs and Safety Tread** - Check for damaged signs (decals). Replace any signs that are damaged.
- **Track Tension** - Check tension and adjust as needed.
- **Pivot Points** - Grease all machinery pivot points. Grease track expansion. Grease clamp (if equipped).
- **Attachment Coupler** - Check for damage or loose parts (if equipped).

#### *First 50 Hours*

- **Drive Belts (Alternator)** - Check condition. Replace as needed.
- **Engine Oil and Filter** - Replace oil and filter.

#### *Every 50 Hours*

- **Swing Bearing** - Grease swing bearing and swing pinion. Service every 10 hours when operating in water.
- **Battery** - Check cables and connections.
- **Fuel Tank** - Drain water and sediment from fuel tank and fuel filter.

## **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

## SERVICE SCHEDULE (CONT'D)

### Maintenance Intervals (Cont'd)

#### *First 100 Hours*

- **Alternator and Starter** - Check connections.
- **Travel Motors (Final Drive)** - Replace fluid.
- **Hydraulic Filter** - Replace the hydraulic filter.

#### *Every 100 Hours*

- **Spark Arrester** - Empty spark chamber.

#### *Every 250 Hours Or Every 12 Months*

- **Fuel Filter** - Replace fuel filter.
- **Travel Motors (Final Drive)** - Replace fluid.
- **Drive Belts (Alternator)** - Check condition. Replace as needed.

#### *Every 500 Hours Or Every 12 Months*

- **Engine Oil and Filter** - Replace oil and filter.
- **Engine Cooling System** - Clean debris from radiator / hydraulic fluid cooler.
- **Hydraulic Filter and Hydraulic Reservoir Breather Cap** - Replace hydraulic filter and reservoir breather cap.
- **Alternator and Starter** - Check connections.
- **Heater** - Clean housing and coils (if equipped).

#### *Every 1000 Hours Or Every 12 Months*

- **Hydraulic Fluid and Filters** - Replace hydraulic fluid and filters.
- **Engine Valves** - Adjust the engine valve clearance.
- **Travel Motors (Final Drive)** - Replace fluid.

#### *Every 24 Months*

- **Coolant** - Replace the coolant.

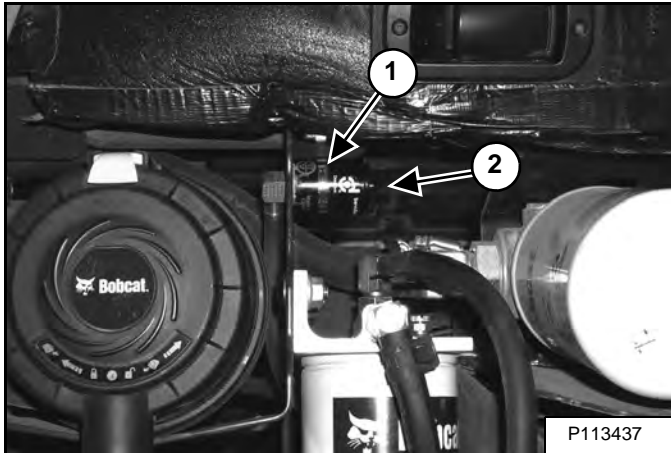
## AIR CLEANER SERVICE

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

### Daily Check

The engine air cleaner is located in the engine compartment. Open the tailgate to access the air cleaner for service. (See TAILGATE on Page 10-50-1.)

**Figure 10-80-1**



Check the condition indicator (Item 1) [Figure 10-80-1]. If the red ring shows in the condition indicator, the filter needs to be replaced.

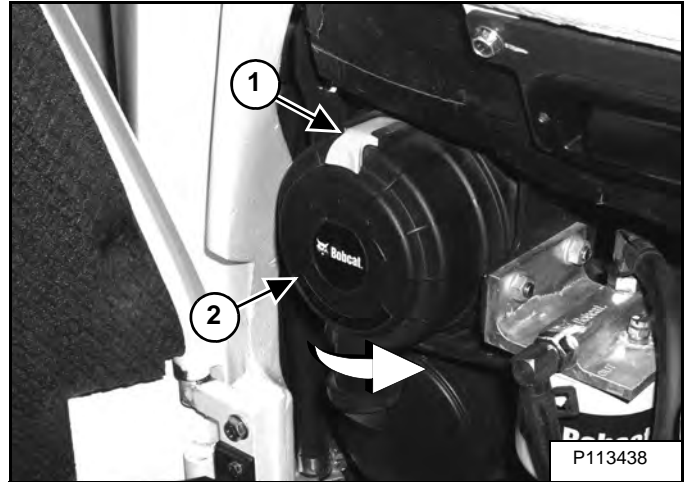
Replace the inner filter every third time the outer filter is replaced or as indicated.

## Replacing The Filters

### Outer Filter

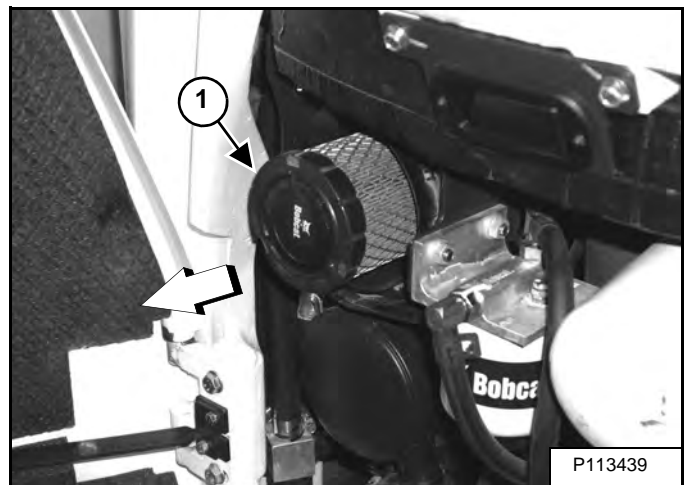
Open the tailgate.

**Figure 10-80-2**



Pull out on the latch (Item 1). Rotate the cover counterclockwise and remove the dust cover (Item 2) [Figure 10-80-2].

**Figure 10-80-3**



Slightly rotate the filter and pull the outer filter (Item 1) [Figure 10-80-3] from the air cleaner housing.

Check the housing for damage.

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

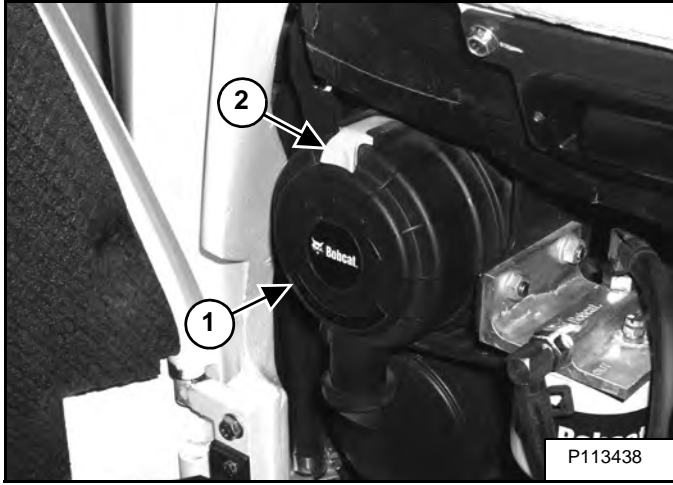
Install a new filter.

## AIR CLEANER SERVICE (CONT'D)

### Replacing The Filter Elements (Cont'd)

#### Outer Filter (Cont'd)

Figure 10-80-4



Position the dust cover (Item 1) [Figure 10-80-4] to the housing. Rotate the housing clockwise until the latch is at the top as shown.

Secure the dust cover (Item 1) and by pushing in on the latch (Item 2) [Figure 10-80-4].

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

After the outer filter has been replaced, press the button (Item 2) [Figure 10-80-1] on the end of the condition indicator.

Start the engine. Run at full rpm, then reduce engine speed and stop the engine.

If the red ring (Item 1) [Figure 10-80-1] shows in the condition indicator, replace the inner filter.

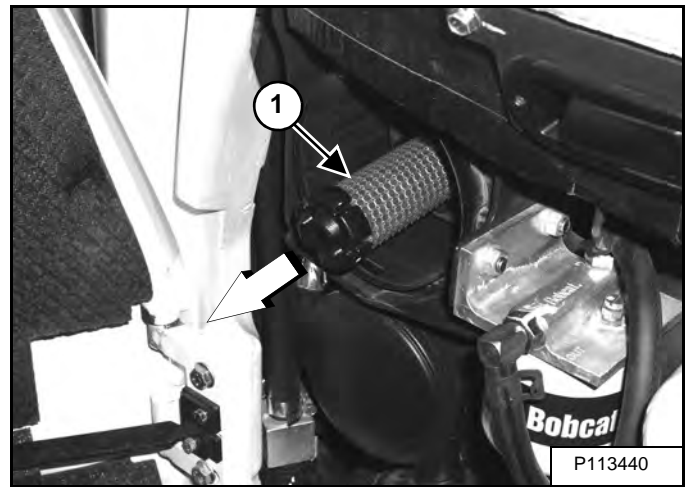
#### Inner Filter

Only replace the inner filter under the following conditions:

- Replace the inner filter every *third* time the outer filter is replaced.
- After the outer filter has been replaced, press the button (Item 2) [Figure 10-80-1] on the condition indicator and start the engine. Run at full rpm, then reduce engine speed and stop the engine. If the red ring shows in the condition indicator, replace the inner filter.

Open the tailgate.

Figure 10-80-5



Remove the dust cover, outer filter, and inner filter (Item 1) [Figure 10-80-5].

Check the housing for damage.

Clean the housing and the seal surfaces. Do NOT use compressed air.

Install the new inner filter.

Install the outer filter and the dust cover.

Press the button on the condition indicator to reset the red ring.

Close the tailgate.



This as a preview PDF file from **best-manuals.com**



Download full PDF manual at **best-manuals.com**