



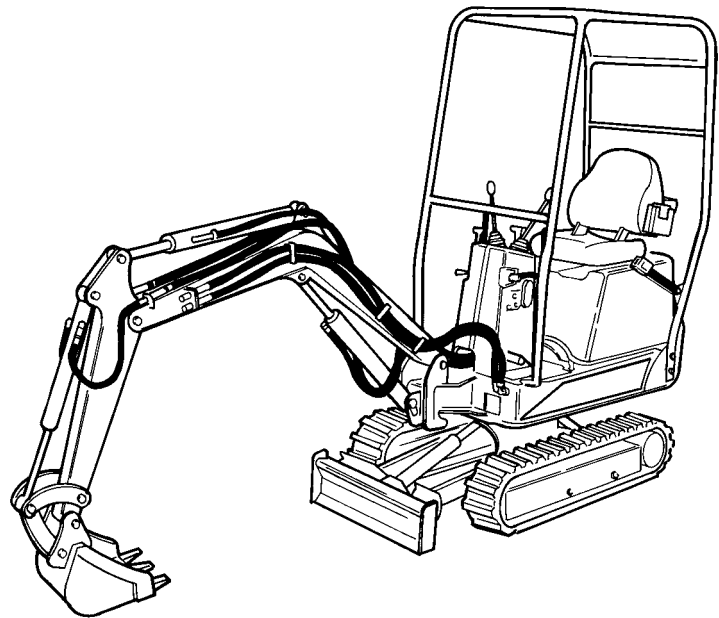
Bobcat®

316

Service Manual

S/N 522811001 & Above

S/N 522911001 & Above



MAINTENANCE SAFETY



WARNING

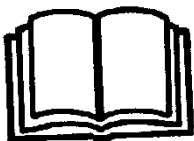
Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual, Operator's Handbook and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after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

W-2003-0903



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

CORRECT



B-10731a

- Never service the Bobcat Hydraulic Excavator without instructions.

CORRECT



B-15797

- Use the correct procedure to lift and support the excavator.
- Always lift the blade fully before installing jackstands.

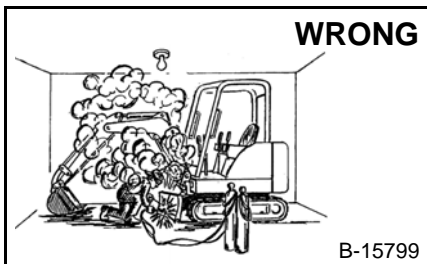
CORRECT



B-15798

- Cleaning and maintenance are required daily.

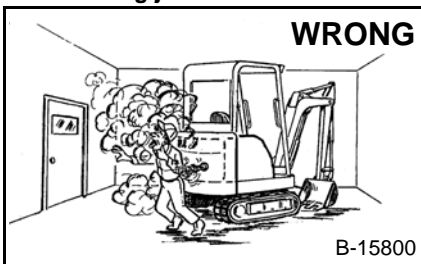
WRONG



B-15799

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

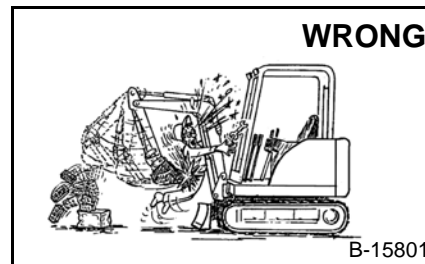
WRONG



B-15800

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

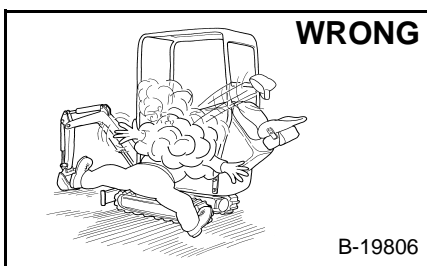
WRONG



B-15801

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

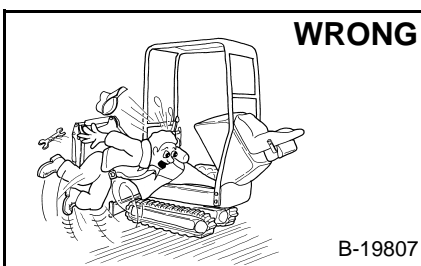
WRONG



B-19806

- 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.

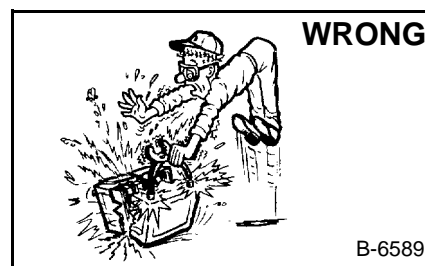
WRONG



B-19807

- 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 side access covers closed except for service.

WRONG



B-6589

- Lead-acid batteries produce flammable and explosive gases.
- Keep arcs, sparks, flames and lighted tobacco away from batteries.
- Batteries contain acid which burns eyes or skin on contact. Wear protective clothing. If acid contacts body, flush well with water. For eye contact flush well and get immediate medical attention.

Maintenance procedures which are given in the Operation & Maintenance Manual can be performed by the owner/operator without any specific technical training. Maintenance procedures which are **not** in the Operation & Maintenance Manual must be performed **ONLY BY QUALIFIED BOBCAT SERVICE PERSONNEL**. Always use genuine Bobcat replacement parts. The Service Safety Training Course is available from your Bobcat dealer.

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**SAFETY &
MAINTENANCE**

**HYDRAULIC
SYSTEM**

UNDERCARRIAGE

**UPPERSTRUCTURE
& SWING
SECTION**

**ELECTRICAL
SYSTEM**

**ENGINE
SERVICE**

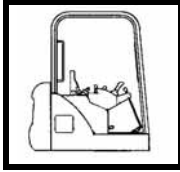
SPECIFICATIONS

FOREWORD

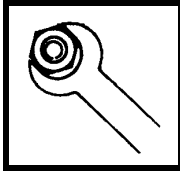
This manual is for the Bobcat Hydraulic excavator mechanic. It provides necessary servicing and adjustment procedures for the hydraulic excavator and its component parts and systems. Refer to the Operation & Maintenance Manual for operating instructions, starting procedure, daily checks, etc.

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

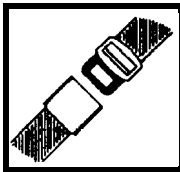
1. Check that the ROPS/TOPS/FOGS is in good condition and is not modified.



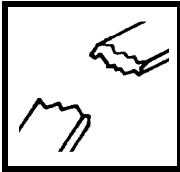
2. Check that ROPS/TOPS mounting hardware is tightened and is Bobcat approved.



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



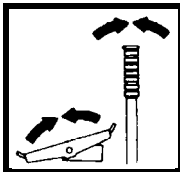
4. Inspect for loose or broken parts or connections.



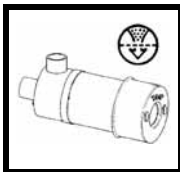
5. Machine signs must be legible and in the correct location.



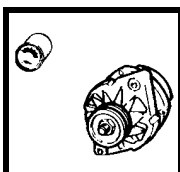
6. Steering levers, control levers and foot pedals must return to neutral. Check that foot pedals lock and control lever locks are in working order.



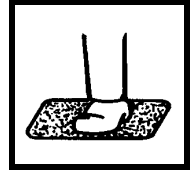
7. Inspect the air cleaner for damage or leaks. Check the condition of the element.



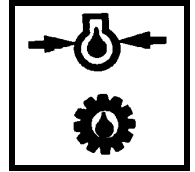
8. Check the electrical charging system.



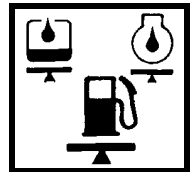
9. Safety treads must be in good condition.



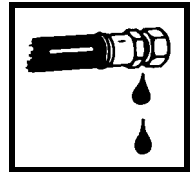
10. Check for correct function of indicator lamps (Optional on some models).



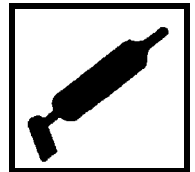
11. Check hydraulic fluid level, engine oil level and fuel supply.



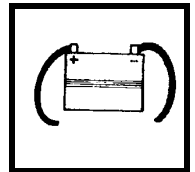
12. Inspect for fuel, oil or hydraulic fluid leaks.



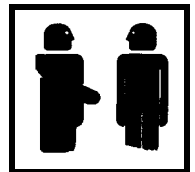
13. Lubricate the excavator.



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.



CALIFORNIA PROPOSITION 65 WARNING
 Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects and other reproductive harm.

SAFETY INSTRUCTIONS (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.

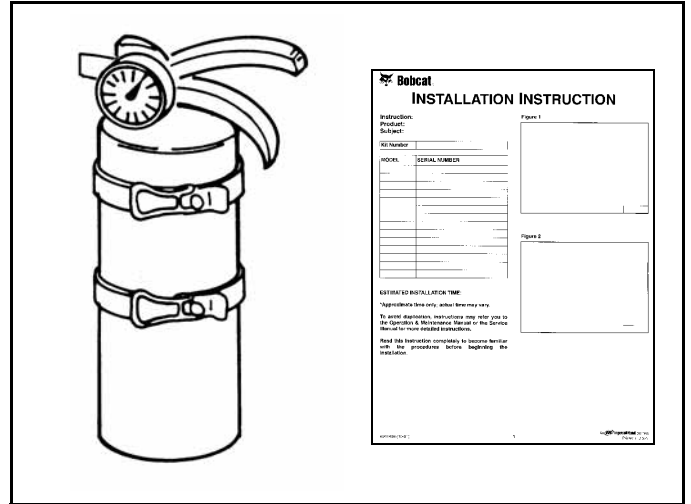
Flammable debris (leaves, straw, etc.) must be removed regularly. If flammable debris is allowed to accumulate, it will increase fire hazard. Clean often to avoid this accumulation. Flammable debris in the engine compartment is a potential hazard.

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

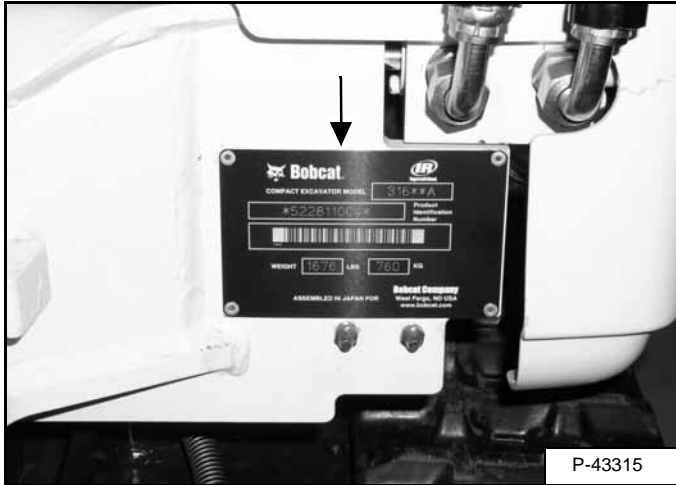


- Know where fire extinguishers and first aid kits are located and how to use them. Fire extinguishers are available from your Bobcat dealer **[Figure 1]**.

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.

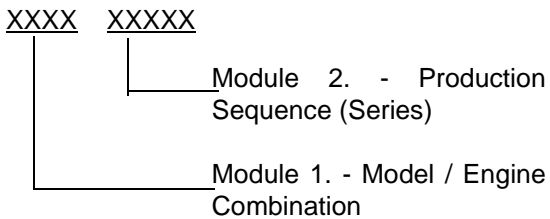
Figure 1



EXCAVATOR SERIAL NUMBER

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

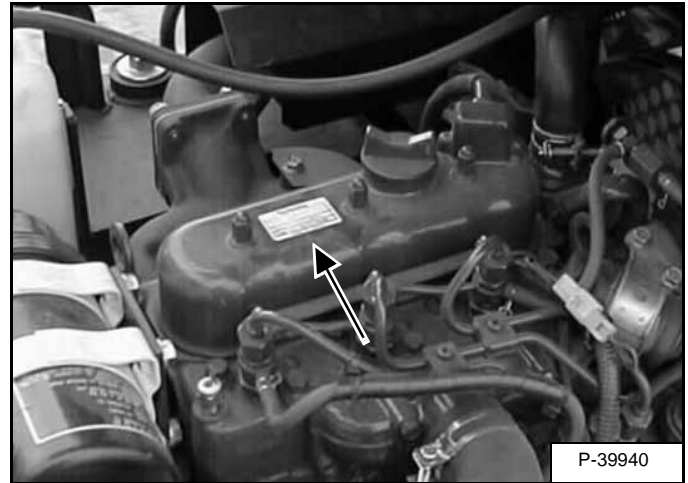
Explanation of excavator Serial Number:



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.

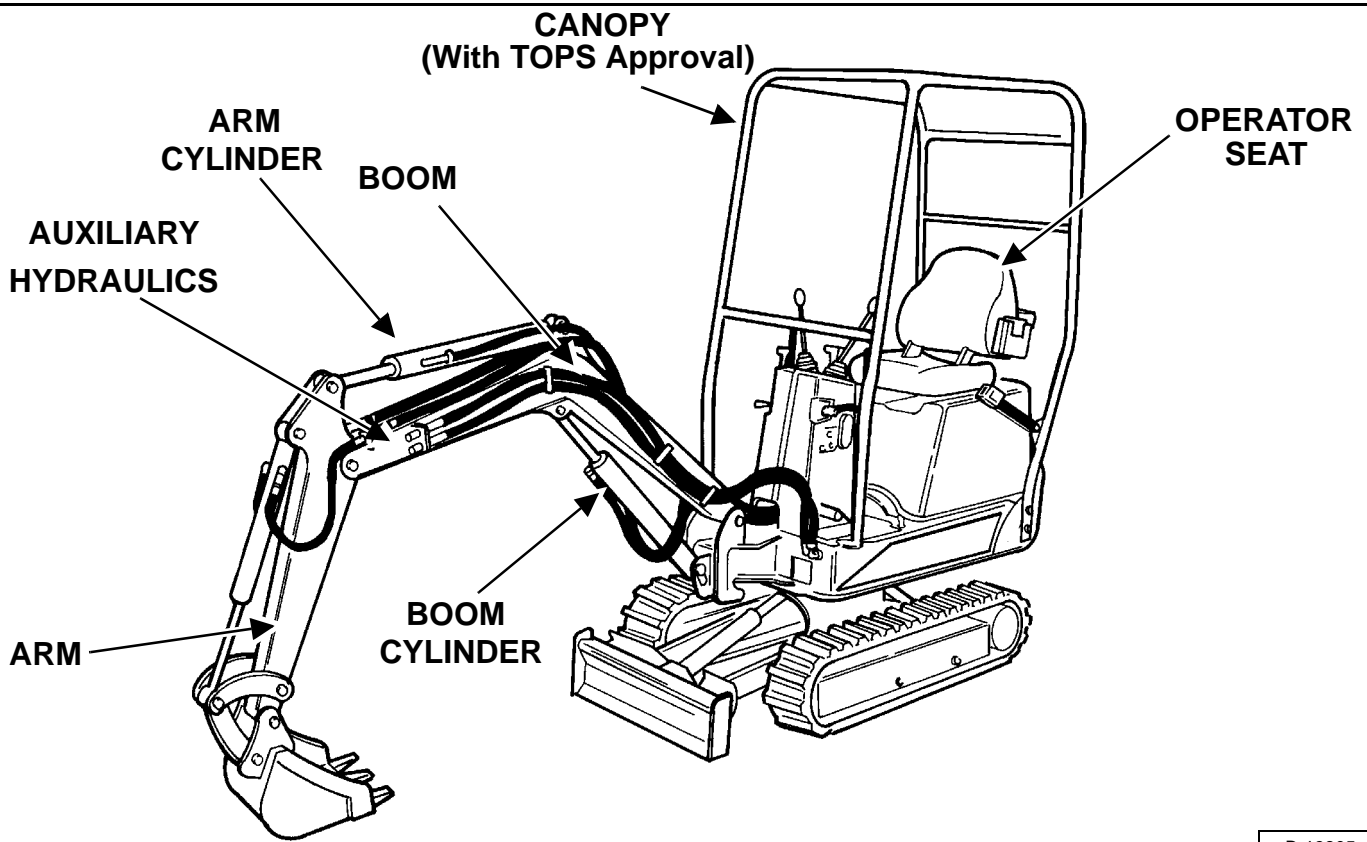
ENGINE SERIAL NUMBER

Figure 2

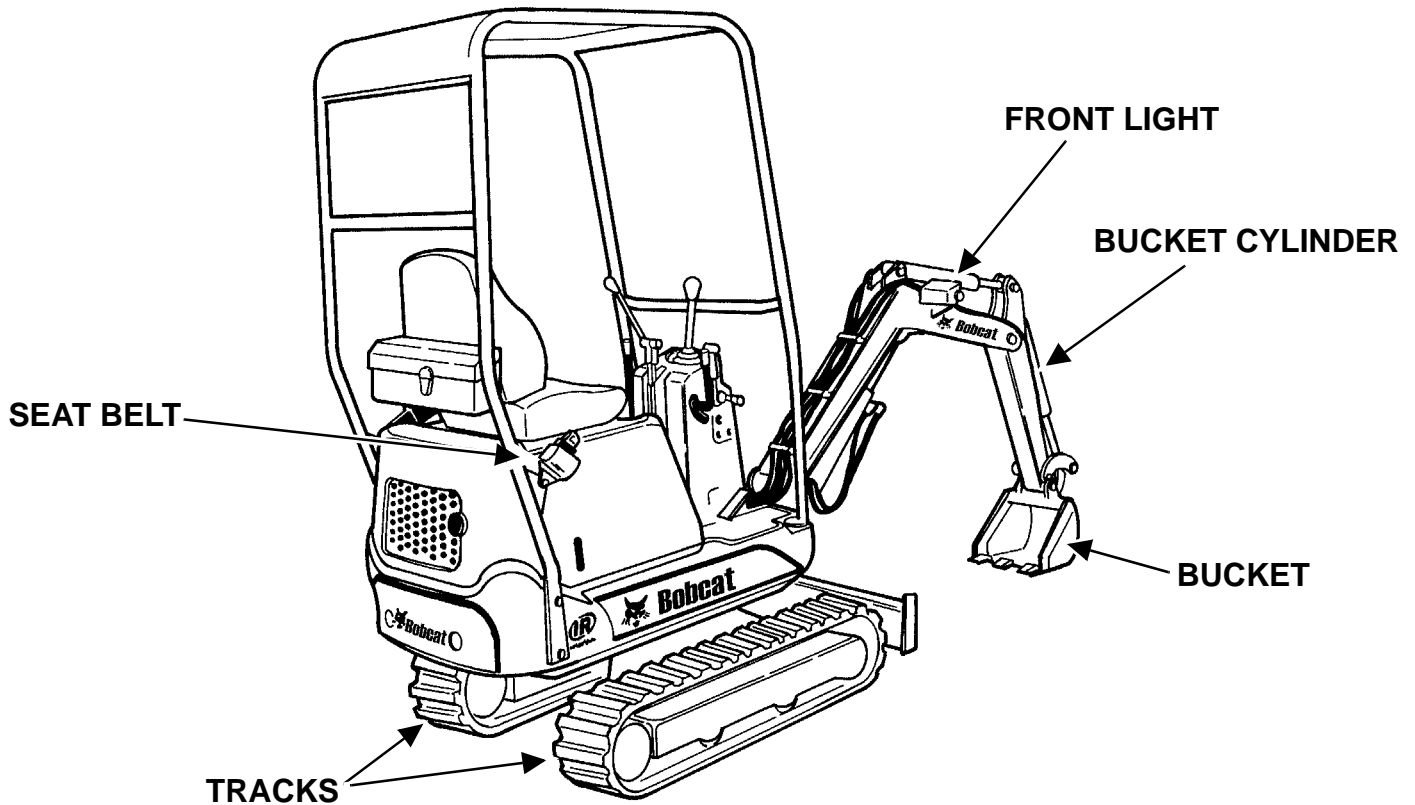


The engine serial number is located on the engine in the location shown [Figure 2].

IDENTIFICATION AND MACHINE SIGNS (DECALS)



B-19805



B19797

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**SAFETY &
MAINTENANCE**

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LIFTING THE EXCAVATOR

Procedure

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

Raise the blade all the way.

Turn the upperstructure so that the boom is at the opposite end as the blade.

Put all the controls in neutral and engage the swing lock (See UPPERSTRUCTURE SLEW LOCK on Page 10-20-1).

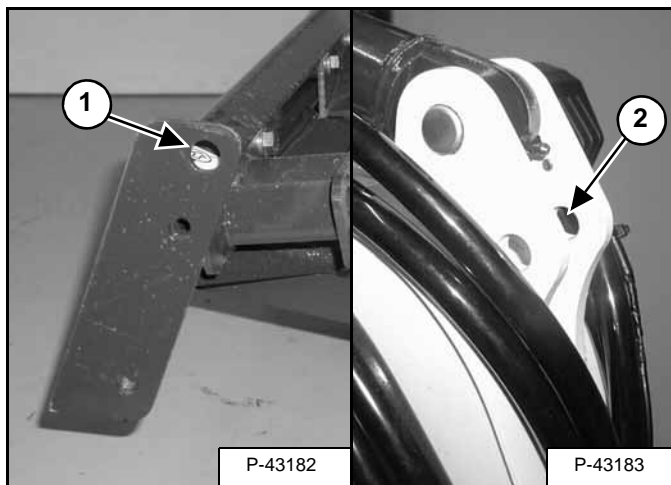
WARNING

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 10-10-1



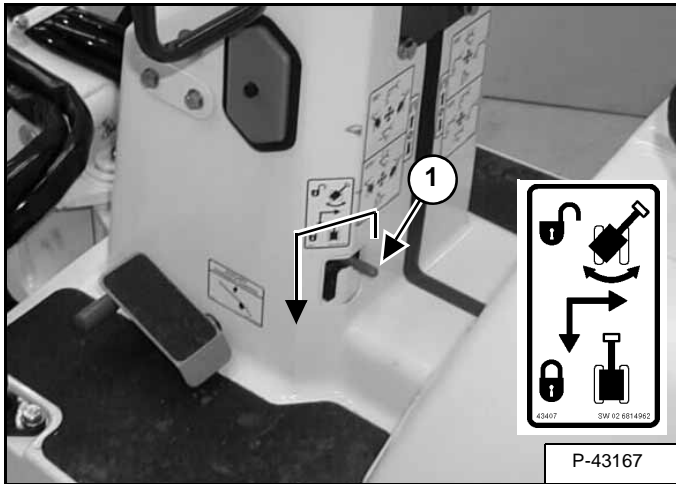
Fasten the chains to the ends of the blade (Item 1) **[Figure 10-10-1]** and up to a lifting fixture above the canopy. The lifting fixture must extend over the sides of the canopy to prevent the chains from hitting the TOPS.

Install a 1 inch (25 mm) bolt (Grade 5) through the holes at the top of the boom (Item 2) **[Figure 10-10-1]**. Install nut. Fasten a chain from the bolt to the lift fixture.

UPPERSTRUCTURE SLEW LOCK

Operation

Figure 10-20-1



When the upperstructure slew lock is engaged (locked), the upperstructure of the excavator is locked to the track frame and will not swing. The upperstructure must be aligned straight forward (with the boom over the blade OR 180° to the rear for the upperstructure slew lock to engage).

Raise the lever slightly (Item 1) [Figure 10-20-1], turn it to the left and lower the lock.

Raise the lever and turn to the right to disengage the upperstructure slew lock [Figure 10-20-1].

IMPORTANT

Before slewing the upperstructure, make sure the slew lock is disengaged.

I-2051-0905

! WARNING

AVOID INJURY

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

W-2197-0904

TRANSPORTING THE EXCAVATOR

Loading Onto Transport Vehicle

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 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 (or trailer) 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 to be supported when loading or unloading to prevent the front of the transport from raising.

Determine the direction of the track movement before moving the machine (blade forward). Engage the swing lock (See UPPERSTRUCTURE SLEW LOCK on Page 10-20-1).

Figure 10-30-1



Move the machine forward onto the transport vehicle (Item 1) [Figure 10-30-1].

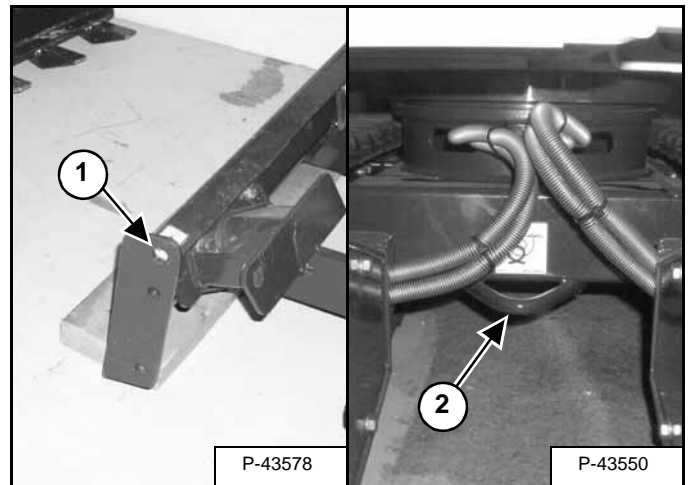
Do not change direction of the machine while it is on the ramps.

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

Stop the engine and remove the key.

Put blocks under the front and rear of the track shoes.

Figure 10-30-2



Fasten chains to the front corners of the blade (Item 1) and to the tie down loop at the rear of the track frame (Item 2) [Figure 10-30-2].

Use chain binders to tighten the chains and then safety 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.

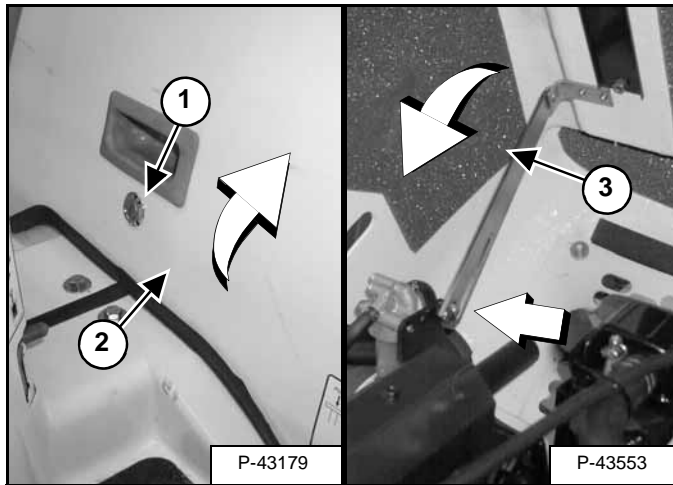
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ENGINE COVER

Opening the Engine Cover

The engine cover must be opened to provide access for machine maintenance.

Figure 10-40-1



Use the key to release the latch (Item 1) and raise the engine cover (Item 2) **[Figure 10-40-1]** all the way up until it is supported in the open position.

Closing the Engine Cover

Hold the engine cover open and release the support (Item 3) **[Figure 10-40-1]**. Lower the engine cover and engage the latch.

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