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REFERENCE INFORMATION

Write the correct information for YOUR excavator in the spaces below. Always use these numbers when referring to your Bobcat Excavator.

Bobcat Excavator

Serial Number

Engine Serial Number

NOTES

FOREWORD

SAFETY

OPERATING INSTRUCTIONS

PREVENTIVE MAINTENANCE

MACHINE SIGN TRANSLATIONS

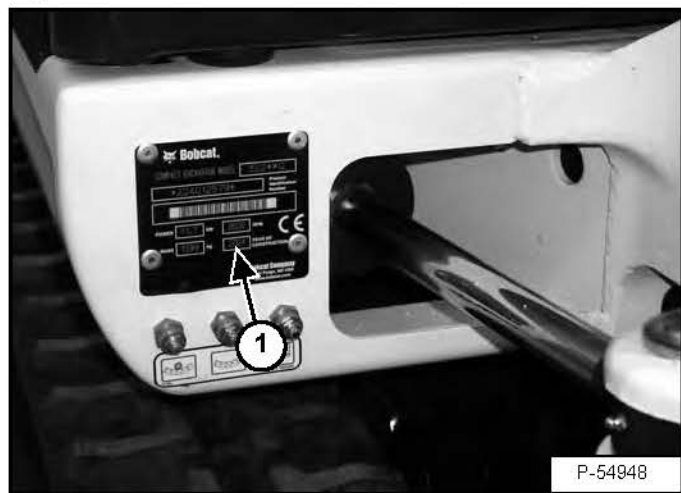
SPECIFICATIONS

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.

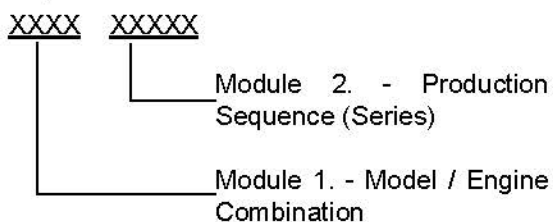
Excavator Serial Number

Figure 1



The excavator serial number plate (Item 1) [Figure 1] is located on the front right hand corner of the frame.

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

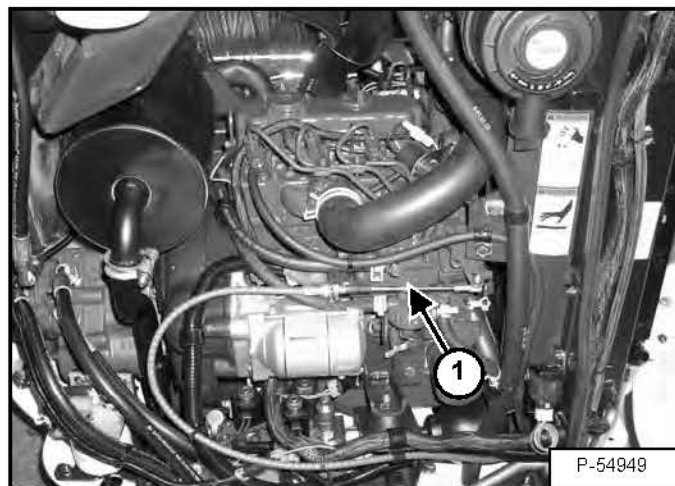
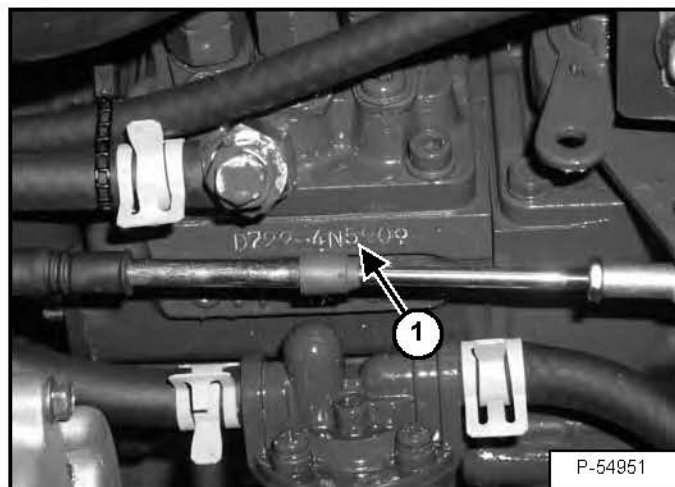


Figure 3



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

SAFETY INSTRUCTIONS (CONT'D)

Safe Operation Is The Operator's Responsibility



Safety Alert Symbol

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



WARNING

Operator must have instructions before running the machine. Untrained operators can cause injury or death.

W-2001-1285

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 Bobcat excavator and attachment must be in good operating condition before use.

Check all of the items on the Bobcat Service Schedule Decal under the 8-10 hour column or as shown in the Operation & Maintenance Manual.

Safe Operation Needs A Qualified Operator

For an operator to be qualified, he or she must not use drugs or alcoholic drinks which impair alertness or coordination while working. An operator who is taking prescription drugs must get medical advice to determine if he or she can safely operate a machine.

A Qualified Operator Must Do The Following:

Understand the Written Instructions, Rules and Regulations

- The written instructions from Bobcat Company include the Delivery Report, Operation & Maintenance Manual, Operator's Handbook, Safety Manual and machine signs (decals).
- Check the rules and regulations at your location. The rules may include an employer's work safety requirements. Regulations may apply to local driving requirements or use of a Slow Moving Vehicle (SMV) emblem. Regulations may identify a hazard such as a utility line.

Have Training with Actual Operation

- Operator training must consist of a demonstration and verbal instruction. This training is given by your Bobcat dealer before the product is delivered.
- The new operator must start in an area without bystanders and use all the controls until he or she can operate the machine and attachment safely under all conditions of the work area. Always fasten seat belt before operating.
- Operator Training Courses are available from your Bobcat dealer in English and Spanish. They provide information for safe and efficient equipment operation. Safety videos are also available.
- Service Safety Training Courses are available from your Bobcat dealer. They provide information for safe and correct service procedures.

Know the Work Conditions

- Know the weight of the materials being handled. Avoid exceeding the Rated Lift Capacity of the machine. Material which is very dense will be heavier than the same volume of less dense material. Reduce the size of load if handling dense material.
- The operator must know any prohibited uses or work areas, for example, he or she needs to know about excessive slopes.
- Know the location of any underground lines. Call local utilities or the TOLL FREE phone number found in the *Before Operation* Section of this manual.
- Wear tight fitting clothing. Always wear safety glasses when doing maintenance or service. Safety glasses, respiratory equipment, hearing protection or Special Applications Kits are required for some work. See your Bobcat dealer about Bobcat Safety Equipment for your model.

SI EXC-0208

HYDRAULIC CONTROLS

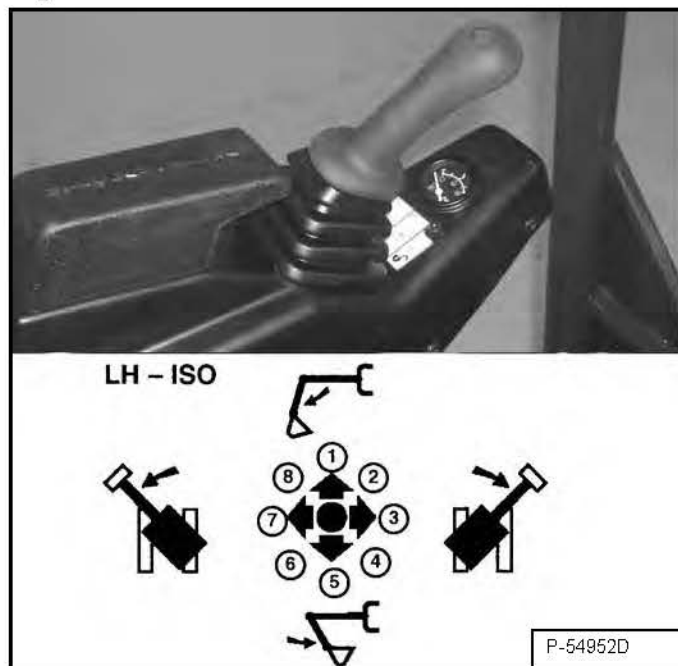
Description

The work equipment (boom, arm, bucket, and upperstructure slew) is operated by using the left and right control levers (joysticks). These joysticks can be used in either the ISO Control Pattern [Figure OI-33] & [Figure OI-34] or in the STANDARD Control Pattern [Figure OI-35] & [Figure OI-36].

ISO Control Pattern

Left Control Lever

Figure OI-33



The work equipment (boom, arm, bucket, and upperstructure slew) is operated by using the left and right control levers (joysticks) [Figure OI-33] & [Figure OI-34].

The left lever is used to operate the arm and slew the upperstructure [Figure OI-33].

1. Arm out.
2. Arm out and slew right.
3. Slew right.
4. Arm in and slew right.
5. Arm in.
6. Arm in and slew left.
7. Slew left.
8. Arm out and slew left.

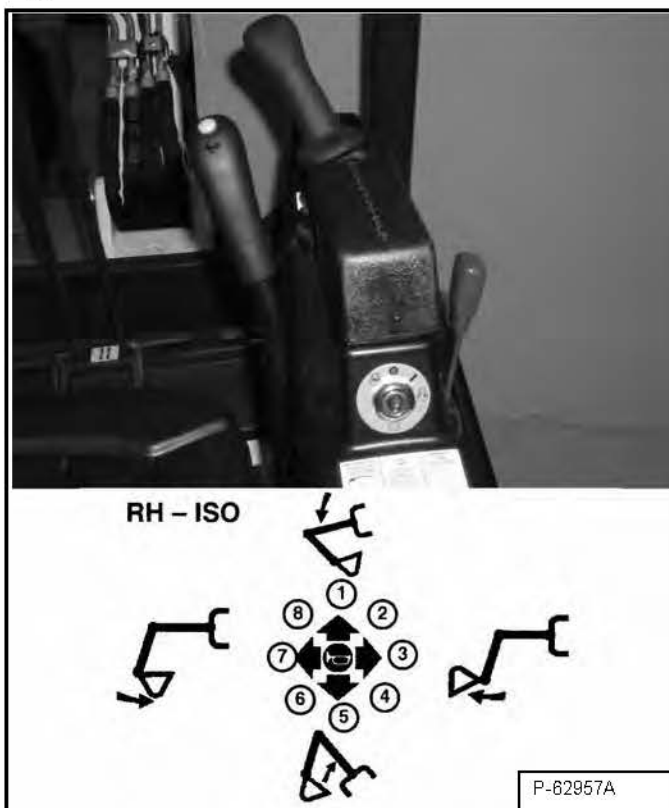
IMPORTANT

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

I-2051-0905

Right Control Lever

Figure OI-34



The right lever is used to operate the boom and bucket [Figure OI-34].

1. Boom lower.
2. Boom lower and bucket dump.
3. Bucket dump.
4. Boom raise and bucket dump.
5. Boom raise.
6. Boom raise and bucket curl.
7. Bucket curl.
8. Boom lower and bucket curl.

! WARNING

AVOID INJURY OR DEATH

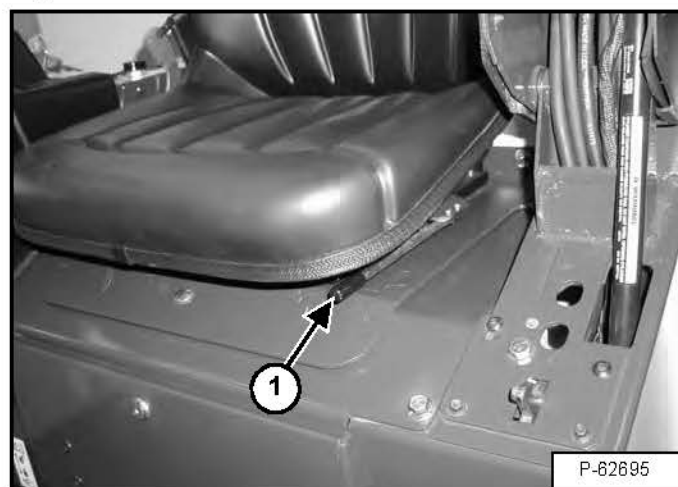
Before leaving the machine:

- Lower the work equipment to the ground.
- Lower the blade to the ground.
- Stop the engine & remove the key.

W-2196-0595

Seat Adjustment

Figure OI-55



Release the seat lever (Item 1) [Figure OI-55] to adjust the seat forward or backward to a comfortable operation.

Seat Belt Adjustment

Figure OI-56



Fasten the seat belt [Figure OI-56].

Control Console

Figure OI-57



Lower the control console [Figure OI-57].

NOTE: The console(s) must be in the locked down position for the hydraulic control levers (joysticks) and traction system to operate.

Lifting A Load

Do not exceed the Rated Lift Capacity. (See LIFT CHART (7104069) on Page OI-4).

! WARNING

AVOID INJURY OR DEATH

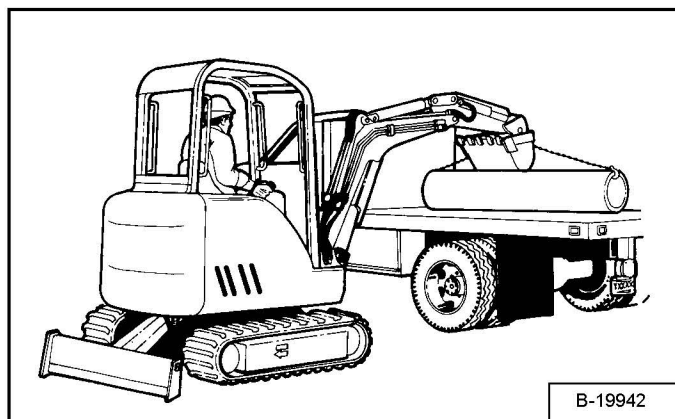
Do not exceed rated lift capacity. Excessive load can cause tipping or loss of control.

W-2374-0500

Extend the bucket cylinder completely and lower the boom to the ground. Stop the engine.

Wrap the chain assembly around the bucket mounting plate.

Figure OI-72



Make sure the load is evenly weighted and centered on the lifting chain, and is secured to prevent the load from shifting [Figure OI-72].

Lift and position the load. Once the load is in position and tension is removed from the lift chain (secondary lift system), remove the secondary lift system.

! WARNING

AVOID INJURY OR DEATH

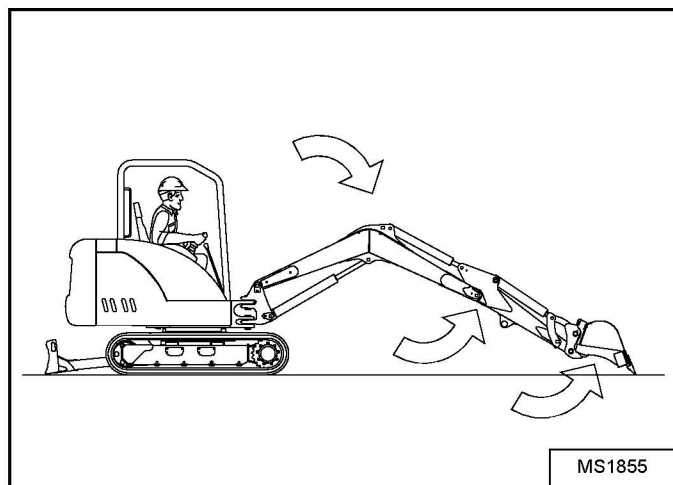
Check area to be excavated for overhead or underground lines such as electrical, gas, oil, water, etc. CALL 1-888-258-0808 and consult local utilities before digging. Extreme caution must be used in areas where utility lines are present.

W-2116-0903

Excavating

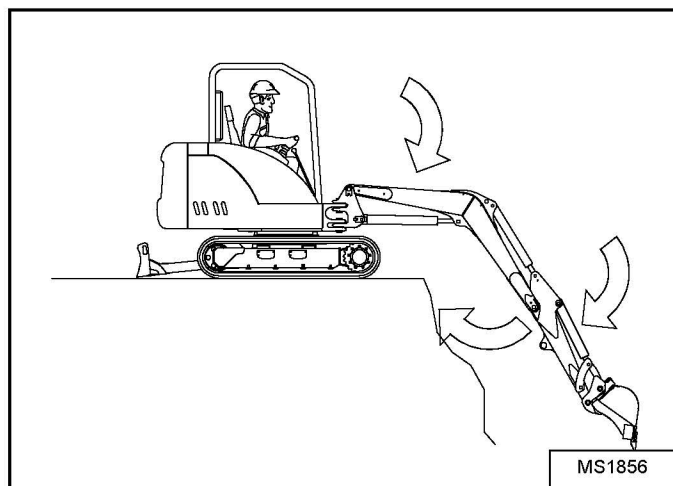
Lower the blade to provide stability.

Figure OI-73



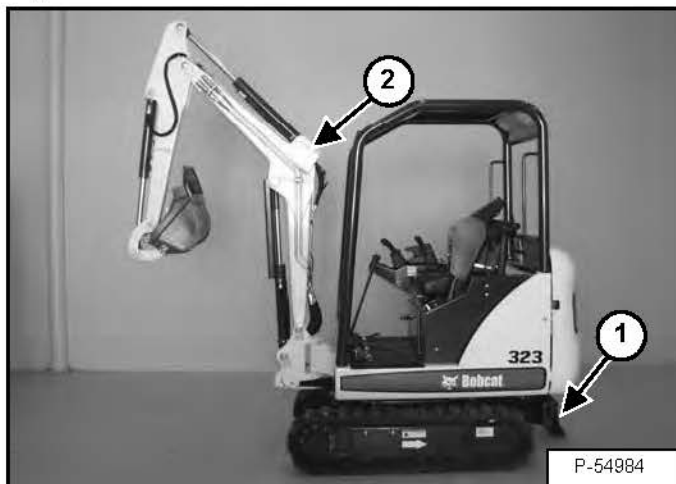
Extend the arm, lower the boom, and open the bucket [Figure OI-73].

Figure OI-74



Retract the arm, while lowering boom and curling the bucket [Figure OI-74].

Figure OI-95



Fully extend the cylinders of the bucket, arm, and boom so that the excavator is in the position as shown [Figure OI-95].

Engage the upperstructure slew lock. (See Upperstructure Slew Lock on Page OI-6).

Raise the blade all the way.

Put all the control levers in neutral.

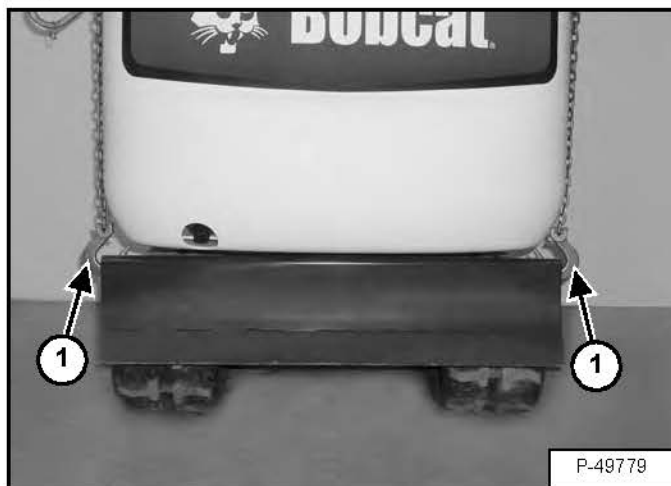
WARNING

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 upperstructure slew lock.
- Never lift with operator on machine.

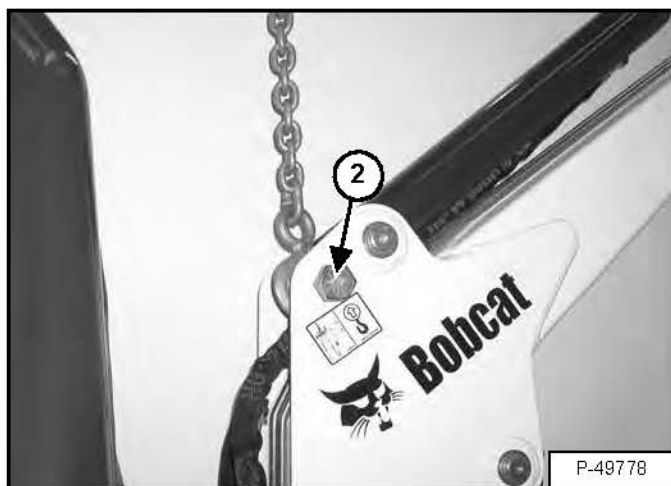
W-2202-0607

Figure OI-96



Fasten chains to the ends of the blade (Item 1) [Figure OI-95] and [Figure OI-96] 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.

Figure OI-97



Install a one inch (25 mm) bolt and nut (Grade 5 or 8) through the holes at the boom (Item 2) [Figure OI-95] and [Figure OI-97]. Fasten a chain from the bolt to the lift fixture.

MOTION ALARM SYSTEM (IF EQUIPPED)

Description

This excavator may be equipped with a motion alarm system. The motion alarm will sound when the operator moves the travel control levers in either the forward or reverse direction.

Inspecting

Figure PM-3

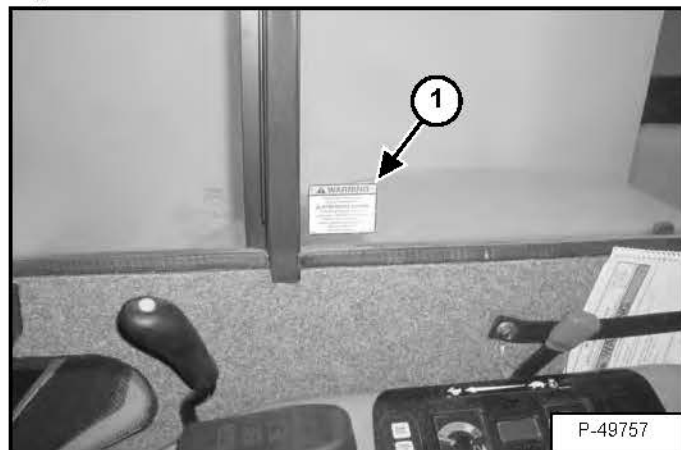
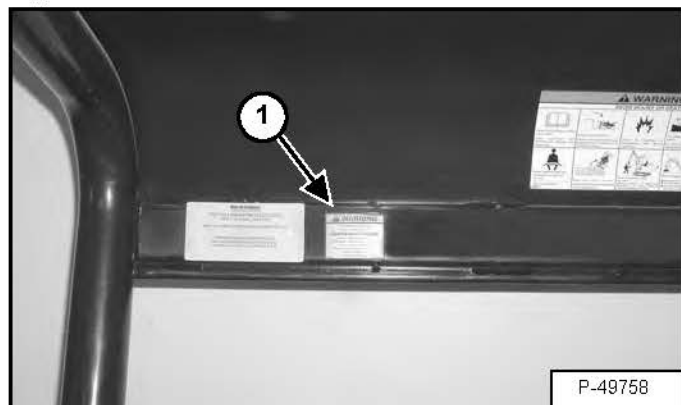


Figure PM-4



Inspect for damaged or missing motion alarm decal (Item 1) [Figure PM-3] (cab machine) or (Item 1) [Figure PM-4] (canopy machine). Replace if required.

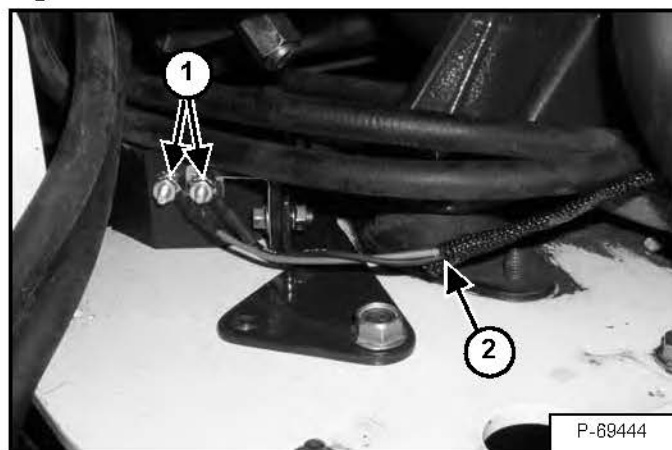
Sit in the operator's seat. Turn excavator key to ON position but do not start the engine.

Move the travel control levers (one lever at a time) in the forward direction. The motion alarm must sound. Move the travel control levers (one lever at a time) in the reverse direction. The motion alarm must sound.

Turn excavator key to OFF position.

The motion alarm is mounted to the louver at the bottom rear of the excavator. (The louver must be removed to access the back-up alarm. See the Service Manual for the correct procedure.)

Figure PM-5



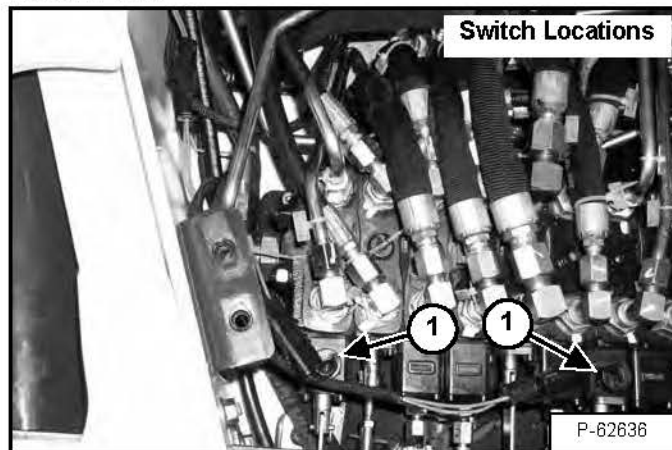
Inspect the motion alarm electrical connections (Item 1) [Figure PM-5], wire harness (Item 2) [Figure PM-5] and motion alarm switches (Item 1) [Figure PM-6] for tightness and damage. Repair or replace any damaged components.

If the motion alarm switch requires adjustment, see information below.

Adjusting Switch Position

Stop the engine. Open the right side cover.

Figure PM-6



The two travel control switches (Item 1) [Figure PM-6] are located in the actuator housings on the control valve travel sections.

The switches (Item 1) [Figure PM-6] are non-adjustable. They must be fully installed into the actuator housings and tightened. Tighten the switch to 31 ft.-lb. (42 N•m).

Inspect the motion alarm system for proper function after switch replacement.

FUEL SYSTEM (CONT'D)

Draining The Fuel Tank

See the **SERVICE SCHEDULE** (See **SERVICE SCHEDULE** on Page PM-5) for the correct service interval.

Turn the upperstructure until the fuel tank drain is centered between the rear tracks.

Figure PM-17

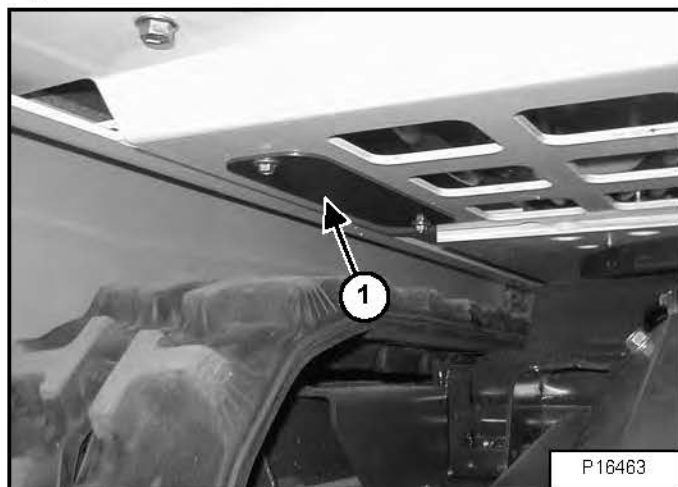
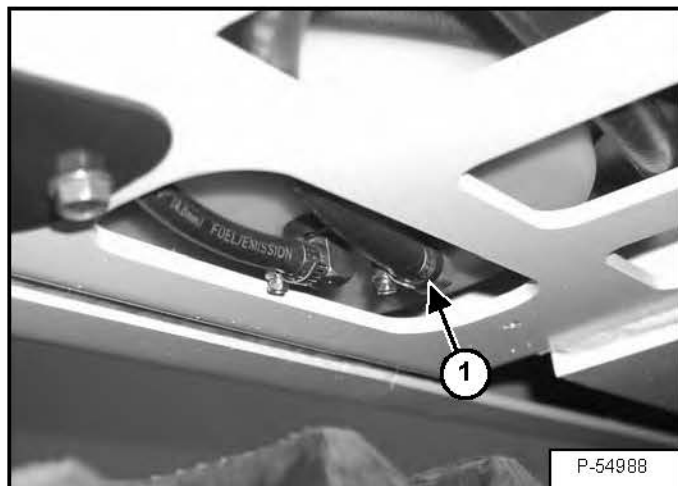


Figure PM-18



Remove the access panel (Item 1) [Figure PM-17] on the bottom of the engine compartment. Loosen the clamp (Item 1) [Figure PM-18] and disconnect the fuel hose.

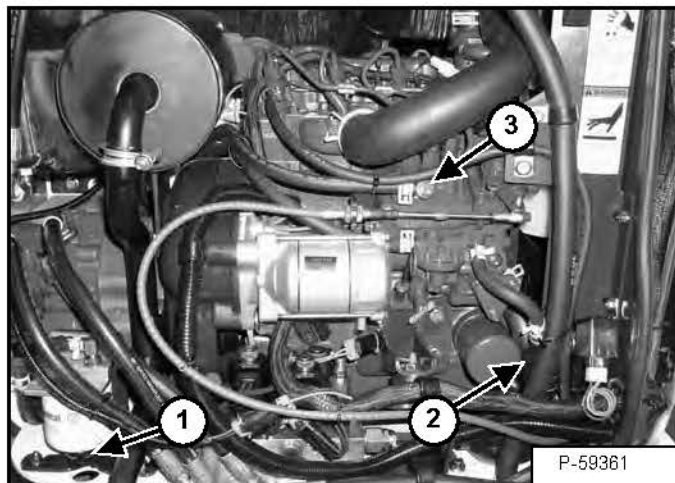
Drain the fuel into a container.

Reuse, recycle or dispose of fuel in an environmentally safe manner.

Removing Air From The Fuel System

After replacing the fuel filter or when the fuel tank has run out of fuel, air must be removed from the fuel system before starting the engine.

Figure PM-19



Open the fuel filter vent (Item 1) [Figure PM-19].

Operate the hand pump (priming bulb) (Item 2) [Figure PM-19] until the fuel flows from the vent with no air bubbles.

Close the vent (Item 1) [Figure PM-19] on the fuel filter housing.

Start the engine. It may be necessary to open the vent (Item 3) [Figure PM-19] (at the fuel injection pump) briefly until the engine runs smoothly.

WARNING

AVOID INJURY OR DEATH

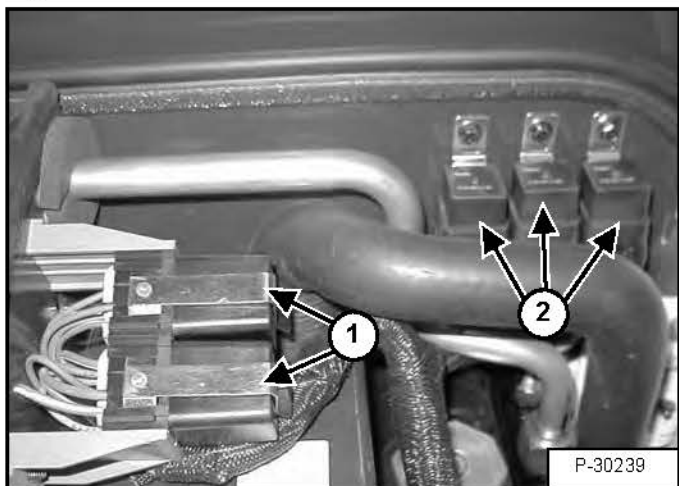
Diesel fuel or hydraulic fluid under pressure can penetrate skin or eyes, causing serious injury or death. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks. Do not use your bare hand. Wear safety goggles. If fluid enters skin or eyes, get immediate medical attention from a physician familiar with this injury.

WV-2072-0807

ELECTRICAL SYSTEM

Description

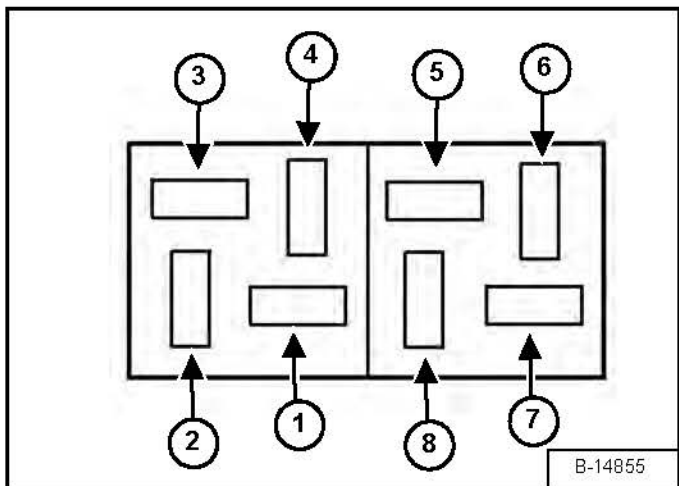
Figure PM-27



The excavator has a 12 volt, negative ground electrical system. The electrical system is controlled by fuses and relays located in the right side of the engine compartment (Items 1 & 2) [Figure PM-27]. The fuses will protect the electrical system when there is an electrical overload. The reason for the overload must be found before starting the engine again.

Fuses And Relay Location / Identification

Figure PM-28



1. **Instrument** - 10A (SW) Hourmeter, Warning Buzzer & Fuel Gauge Back Light
2. **Accessory** - 20A (SW) Accessory Connector, Heater & Horn
3. **Start** - 20A (SW) Key Switch, Unswitched Accessory Connector
4. **Cab** - 15A (SW) Cab Power, Lights, Wiper & Dome Light

5. **Power** - 15A (UNSW) Appliance Socket

6. **Timer Power** - 15A (UNSW) Stop Timer Module

7. **Power** - 15A (SW) Stop Timer Module

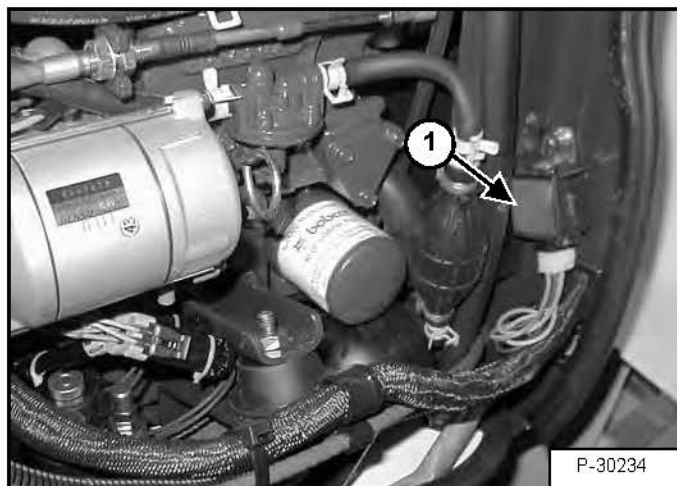
8. **Open** - Not Used [Figure PM-28]

Always replace fuses using the same type and capacity.

Fuel Timer And Diode Location / Identification

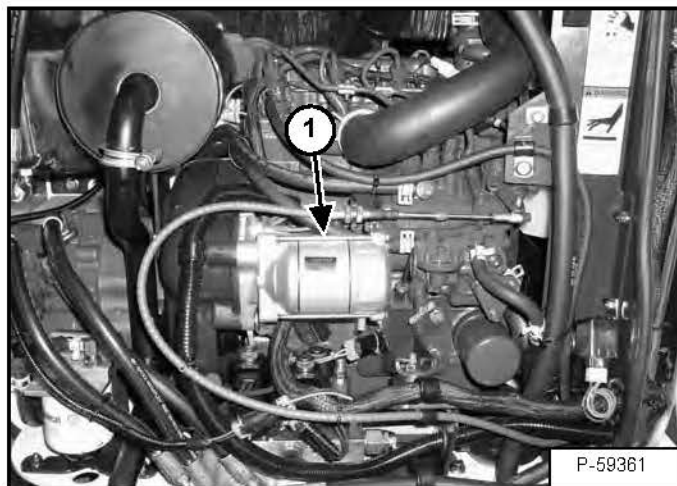
The three electrical relays (Item 2) [Figure PM-27] are located in the engine compartment to the right of the fuel fill. The three relays control the starter, glow plugs and switched power circuits.

Figure PM-29



The fuel shutoff timer (Item 1) [Figure PM-29] is located on the right side of the engine compartment.

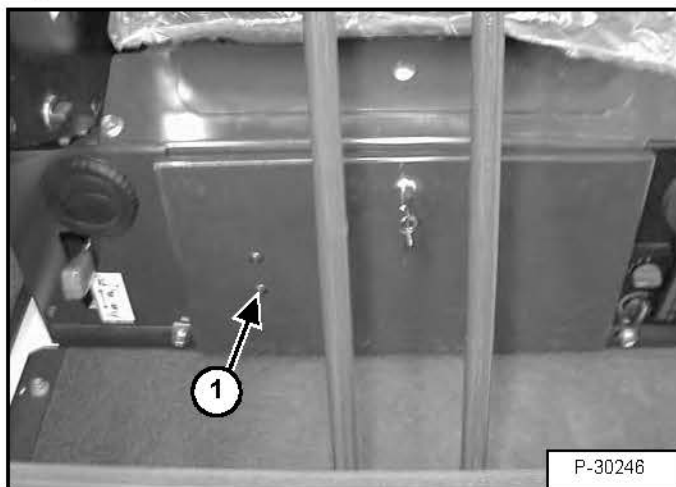
Figure PM-30



There are two diodes (Item 1) [Figure PM-30] in the harness behind the starter. They are for alternator feedback protection and the glow plug during start function.

Removing And Installing The Battery

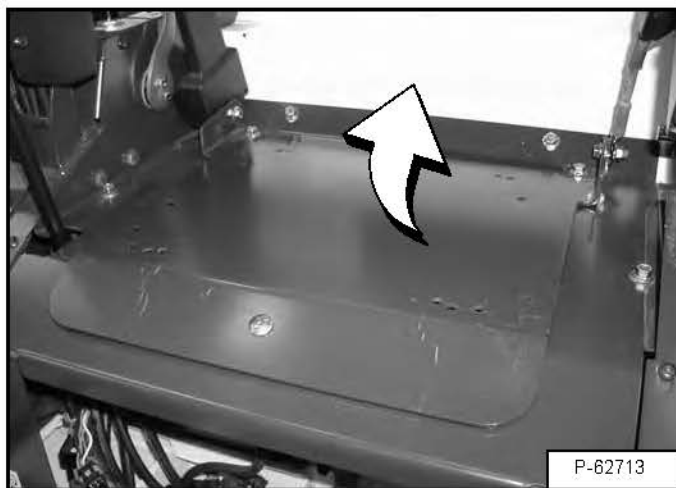
Figure PM-34



Open the storage compartment cover (Item 1) [Figure PM-34].

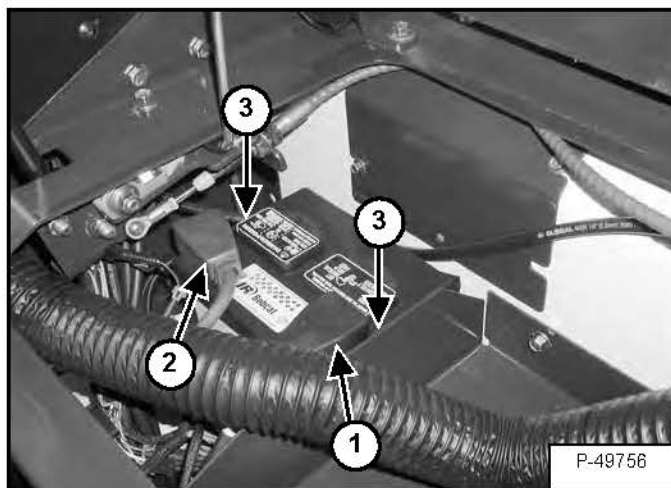
Remove seat and seat pan.

Figure PM-35



Remove seat and raise the seat pan [Figure PM-35].
(See Belt Adjustment on Page PM-32)

Figure PM-36



Disconnect the negative (-) cable (Item 1) [Figure PM-36] first.

Disconnect the positive (+) cable (Item 2) [Figure PM-36].

Remove the bolts (Item 3) [Figure PM-36] from the hold down clamp and remove the clamp.

Remove the battery.

Always clean the terminals and the cable ends, even when installing a new battery.

Install the battery. Install the hold down clamp and tighten the bolts.

Connect the battery cables. Connect the negative (-) cable (Item 1) [Figure PM-36] last to prevent sparks.

WARNING

AVOID INJURY OR DEATH

Batteries contain acid which burns eyes and skin on contact. Wear goggles, protective clothing and rubber gloves to keep acid off body.

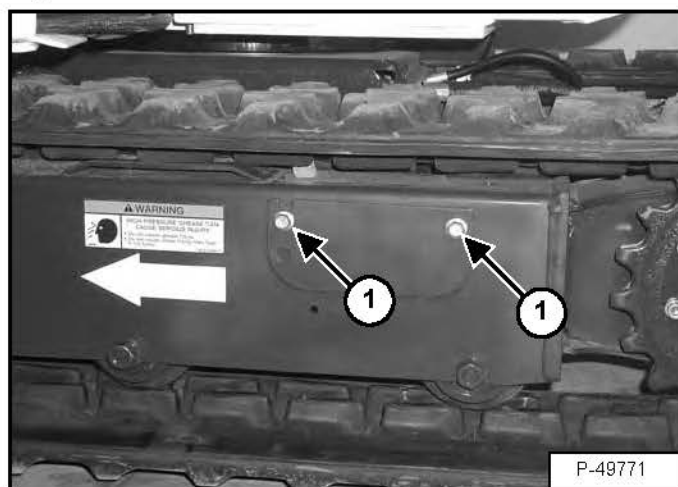
In case of acid contact, wash immediately with water. In case of eye contact get prompt medical attention and wash eye with clean, cool water for at least 15 minutes.

If electrolyte is taken internally drink large quantities of water or milk! DO NOT induce vomiting. Get prompt medical attention.

W-2065-0807

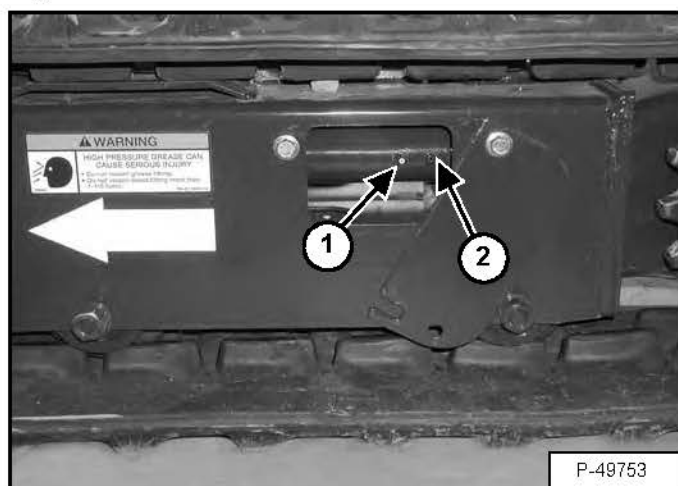
Adjusting (Cont'd)

Figure PM-50



Loosen its two bolts (Item 1) [Figure PM-50] from the cover. Pivot the cover downward.

Figure PM-51



Add grease to the fitting (Item 1) [Figure PM-51] until the track tension is correct.

If tension is too tight, loosen the bleed screw (Item 2) [Figure PM-51] (1 turn maximum) and let grease flow out of the bleed screw. When tension is correct, tighten the bleed screw.

Repeat the procedure for the other side.

If the track tension is still loose after adjusting to the mentioned limit, it indicates the track is worn. See your dealer for repairs.



WARNING

HIGH PRESSURE GREASE CAN CAUSE SERIOUS INJURY

- Do not loosen grease fitting.
- Do not loosen bleed fitting more than 1 - 1/2 turns.

W-2781-0109

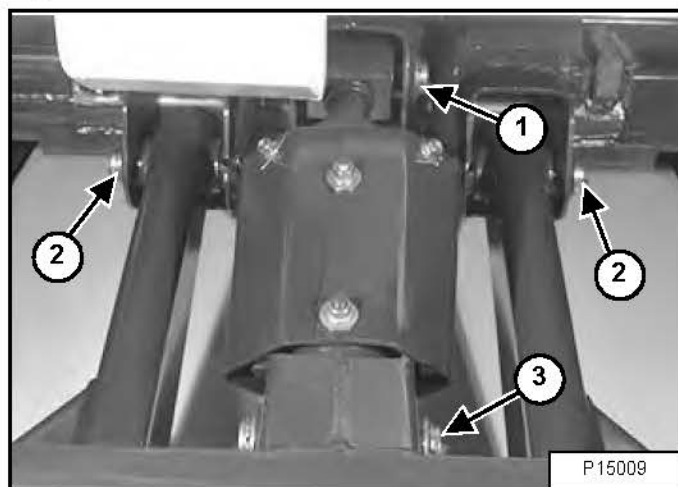
LUBRICATION OF THE HYDRAULIC EXCAVATOR

Lubricate the Hydraulic Excavator as specified in the SERVICE SCHEDULE (See SERVICE SCHEDULE on Page PM-5) for the best performance of the machine.

Record the operating hours each time you lubricate the Hydraulic Excavator.

Always use a good quality lithium based multi-purpose grease when lubricating the excavator. Apply the lubricant until extra grease shows.

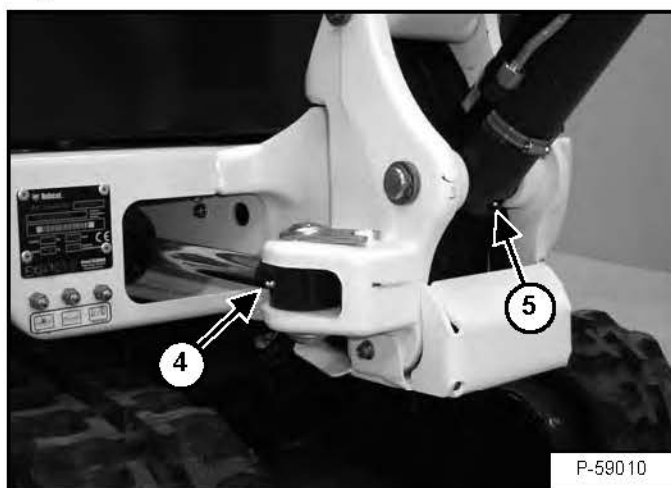
Figure PM-62



Ref Description (# of Fittings)

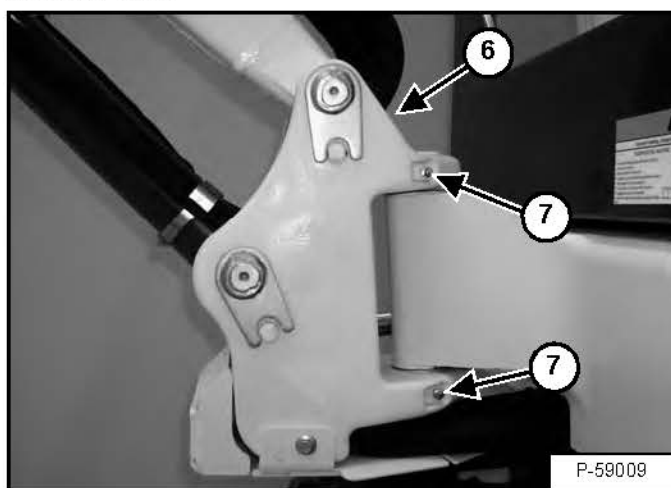
1. Blade Cylinder-Rod End, every 8 - 10 hours (1) [Figure PM-62]
2. Blade Pivots, every 8 - 10 hours (2) [Figure PM-62]
3. Blade Cylinder-Base End, every 8 - 10 hours (1) [Figure PM-62]

Figure PM-63



4. Boom Swing Cylinder-Rod End, every 8 - 10 hours (1) [Figure PM-63]
5. Boom Cylinder-Base End, every 8 - 10 hours (1) [Figure PM-63]

Figure PM-64



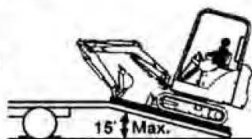
6. Boom Base Pivot, every 8 - 10 hours (1) [Figure PM-64]
7. Boom Swing Pivot, every 8 - 10 hours (2) [Figure PM-64]

! WARNING

Improper loading, transporting and lifting procedures can cause serious injury or death.

TRANSPORTING MACHINE

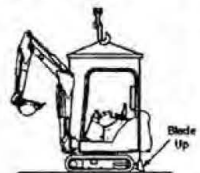
- Use metal loading ramps with sides and slip resistant surfaces.
- Secure ramps to truck bed.
- Engage truck parking brake and block truck tires.
- Ramp angle must not exceed 15°.
- Top of ramp must be level with truck bed.
- Engage swing lock (if equipped).
- Secure machine with tie downs and block tracks.



41742

LIFTING MACHINE

- Lifting device must have adequate capacity to lift machine.
- Maintain center of gravity and balance.
- Position machine as shown below. Engage the swing lock (if equipped).
- Never lift with operator on machine.



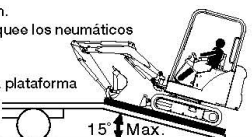
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! ADVERTENCIA

Ejecutar procedimientos de carga, transporte y elevación no adecuados puede causar lesiones serias o accidentes fatales.

TRANSPORTE DE LA MÁQUINA

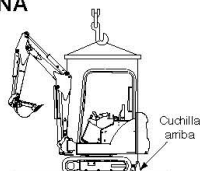
- Utilice rampas de carga metálicas con costados y superficies antideslizantes.
- Asegure las rampas a la plataforma de apoyo del camión.
- Enganche el freno de estacionamiento del camión y bloquee los neumáticos del mismo.
- El ángulo de la rampa no debe exceder los 15°.
- La parte superior de la rampa debe estar nivelada con la plataforma de apoyo del camión.
- Enganche el seguro de giro (si viene equipado).
- Asegure la máquina con amarres y bloquee las orugas.



41742

ELEVACIÓN DE LA MÁQUINA

- El dispositivo de elevación debe tener la capacidad adecuada para elevar la máquina.
- Mantenga el centro de gravedad y balance.
- Posicione la máquina como se muestra.
- Enganche el seguro de giro (si viene equipado).
- Jamás eleve con un operador en la máquina.



SW-01-6808185-AR

! AVERTISSEMENT

Le non respect des procédures de chargement, de transport et de levage peut causer des blessures graves, voire mortelles.

TRANSPORT DE LA MACHINE

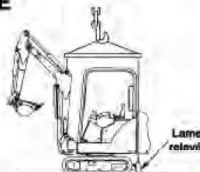
- Utilisez des rampes en acier avec rebords et revêtements anti-dérapants.
- Attachez les rampes au plancher de la remorque.
- Serrez le frein de stationnement et bloquez les roues du camion.
- L'inclinaison de la rampe ne doit pas dépasser 15°.
- L'extrémité de la rampe doit se trouver dans l'alignement du plancher de la remorque.
- Engagez l'axe de verrouillage de l'orientation.
- Attachez la machine avec des chaînes et bloquez les chenilles.



41742

LEVAGE DE LA MACHINE

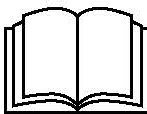
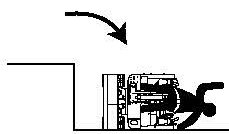


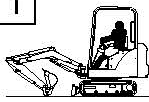


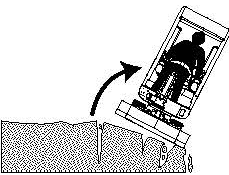
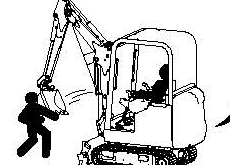

- Le dispositif de levage doit être capable de supporter le poids de la machine.
- Maintenez le centre de gravité et l'équilibre pendant l'opération.
- Positionnez la machine comme indiqué.
- Engagez l'axe de verrouillage de l'orientation.
- Ne levez jamais la pelle quand l'opérateur s'y trouve.



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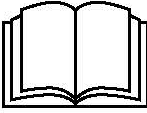
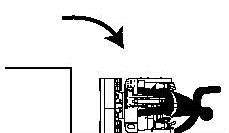

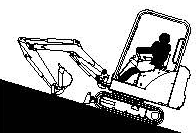
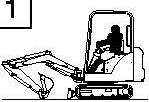


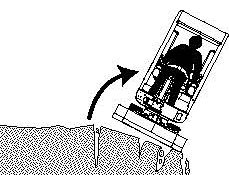


! WARNING

AVOID INJURY OR DEATH

 <p>Never use Excavator without instructions. Read Operation and Maintenance Manual and Handbook.</p>	 <p>Always use cab/canopy. Never modify equipment or use attachments not approved by Bobcat Company.</p>	 <p>Check for overhead or underground lines before operating.</p>	 <p>On slopes, keep heavy end uphill. Do not travel or turn with attachment extended.</p>	<p>TO LEAVE THE EXCAVATOR:</p> <p>1  Lower attachment. Never park with tracks pointed down hill.</p> <p>2  Stop the engine. Raise control console.</p>
 <p>Fasten seat belt securely. Keep feet and hands on controls. Operate controls only from operator's position. 42088</p>	 <p>Keep away from drop-offs. Avoid steep areas or banks that could break away.</p>	 <p>Keep bystanders away. No riders. Check location of blade for direction of travel before moving steering controls.</p>	 <p>When swinging loads:</p> <ul style="list-style-type: none"> ● Keep load low. ● Swing slowly. ● Do not exceed lift capacity. Read lift capacity chart. 	<p>Weitere instruktionen finden sie in der Bedienungsanleitung.</p> <p>Consulte el Manual del Operador par mas instrucciones.</p> <p>Se reporter au manual de l'opérateur pour plus de renseignements.</p> <p>SW 01 6807776</p>

! ADVERTENCIA

EVITE LESIONES OR ACCIDENTES FATALES

 <p>Jamás utilice la Excavadora sin leer las instrucciones previamente. Lea el Manual de operación y mantenimiento y el Manual del Operador.</p>	 <p>Utilice siempre la cabina/ cubierta. Jamás modifique los equipos o utilice implementos no aprobados por Bobcat Company.</p>	 <p>Verifique la presencia de líneas aéreas y subterráneas antes de operar.</p>	 <p>En pendiente, mantenga el extremo pesado cuesta arriba.</p>	<p>ANTES DE BAJARSE DE LA EXCAVADORA:</p> <p>1  Bajo el implemento. Jamás estacione la unidad con las orugas mirando cuesta abajo.</p> <p>2  Detenga el motor. Levante la consola de control.</p>
 <p>Abróchese el cinturón de seguridad con firmeza. Mantenga los pies y las manos en los controles. Opere los controles solamente desde el asiento del operador. 42088</p>	 <p>Manténgase alejado de pendientes perpendiculares. Evite áreas muy inclinadas o bancos desprendibles.</p>	 <p>Mantenga a los espectadores alejados. No lleve pasajeros. Revise la ubicación de la cuchilla para la dirección del desplazamiento antes de mover los controles de dirección.</p>	 <p>Quando gire cargas:</p> <ul style="list-style-type: none"> ● Mantenga la carga abajo. ● Gire lentamente. ● No exceda la capacidad de elevación. Lea la tabla de capacidad de elevación. 	<p>Weitere instruktionen finden sie in der Bedienungsanleitung.</p> <p>Consulte el Manual del operador para obtener mayores instrucciones.</p> <p>Se reporter au manual de l'opérateur pour plus de renseignements.</p> <p>SW 01 6807776 AR</p>