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FOREWORD

SAFETY

**OPERATING
INSTRUCTIONS**

**PREVENTIVE
MAINTENANCE**

**MACHINE SIGN
TRANSLATIONS**

SPECIFICATIONS

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.

REFERENCE INFORMATION

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

Bobcat Hydraulic Excavator

Serial Number

Engine Serial Number

NOTES: _____

YOUR BOBCAT EXCAVATOR DEALER: _____

ADDRESS: _____

PHONE: _____

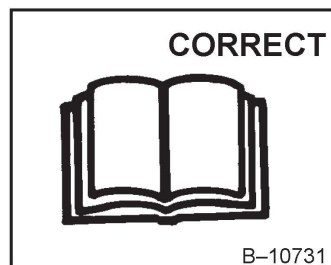
OPERATOR SAFETY WARNINGS

WARNING

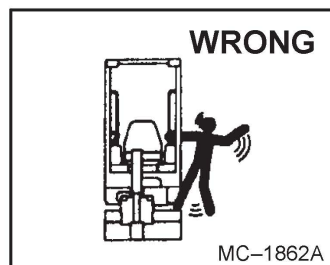
Operator must have instructions before running the machine. Untrained operators can cause injury or death.




W-2001-1285

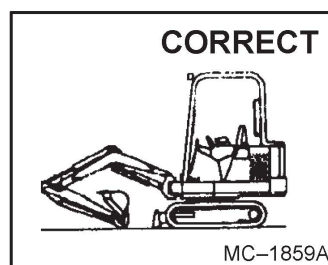
 **Safety Alert Symbol:** This symbol with a warning statement, means: "Warning, be alert! Your safety is involved!" Carefully read the message that follows.






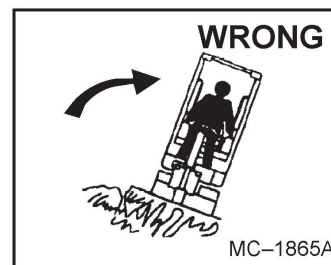
 Never operate without instructions. Read machine signs and Operation & Maintenance Manual.



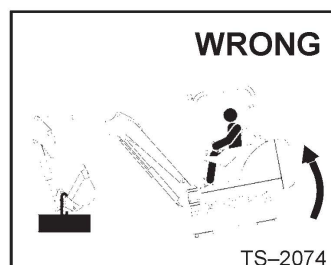
 Do not grasp control handles when entering canopy or cab.
 Be sure controls are in neutral before starting.
 Sound horn and check behind machine before starting.





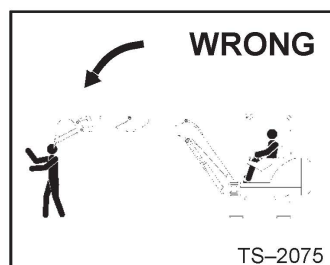
 Never operate without approved canopy or cab.
 Never modify equipment.
 Never use attachments not approved by Bobcat Company.



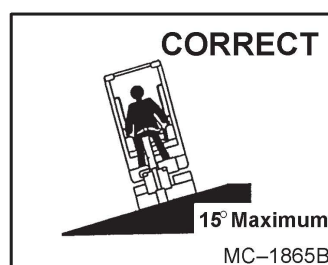
 Avoid steep areas or banks that could break away.



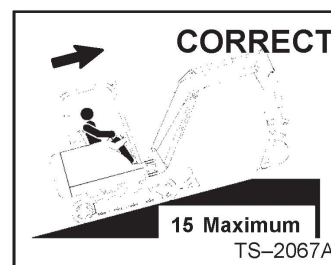
 Use caution to avoid tipping—do not swing heavy load over side of track.
 Operate on flat, level ground.



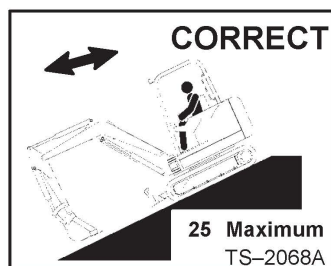
 Keep bystanders out of maximum reach area.
 Do not travel or turn with bucket extended.
 Never carry riders.




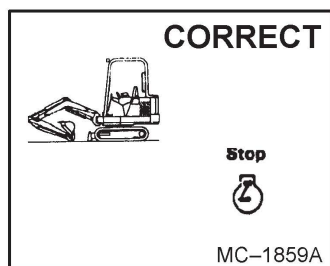
 Never exceed a 15° slope to the side.



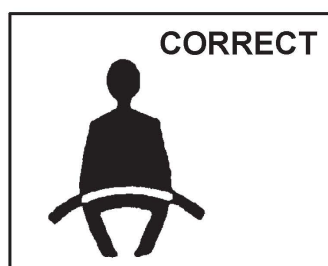
 Never travel up a slope that exceeds 15°.



 Never exceed 25° when going down or backing up a slope.



 To leave Excavator, lower the attachment.
 Stop the engine.

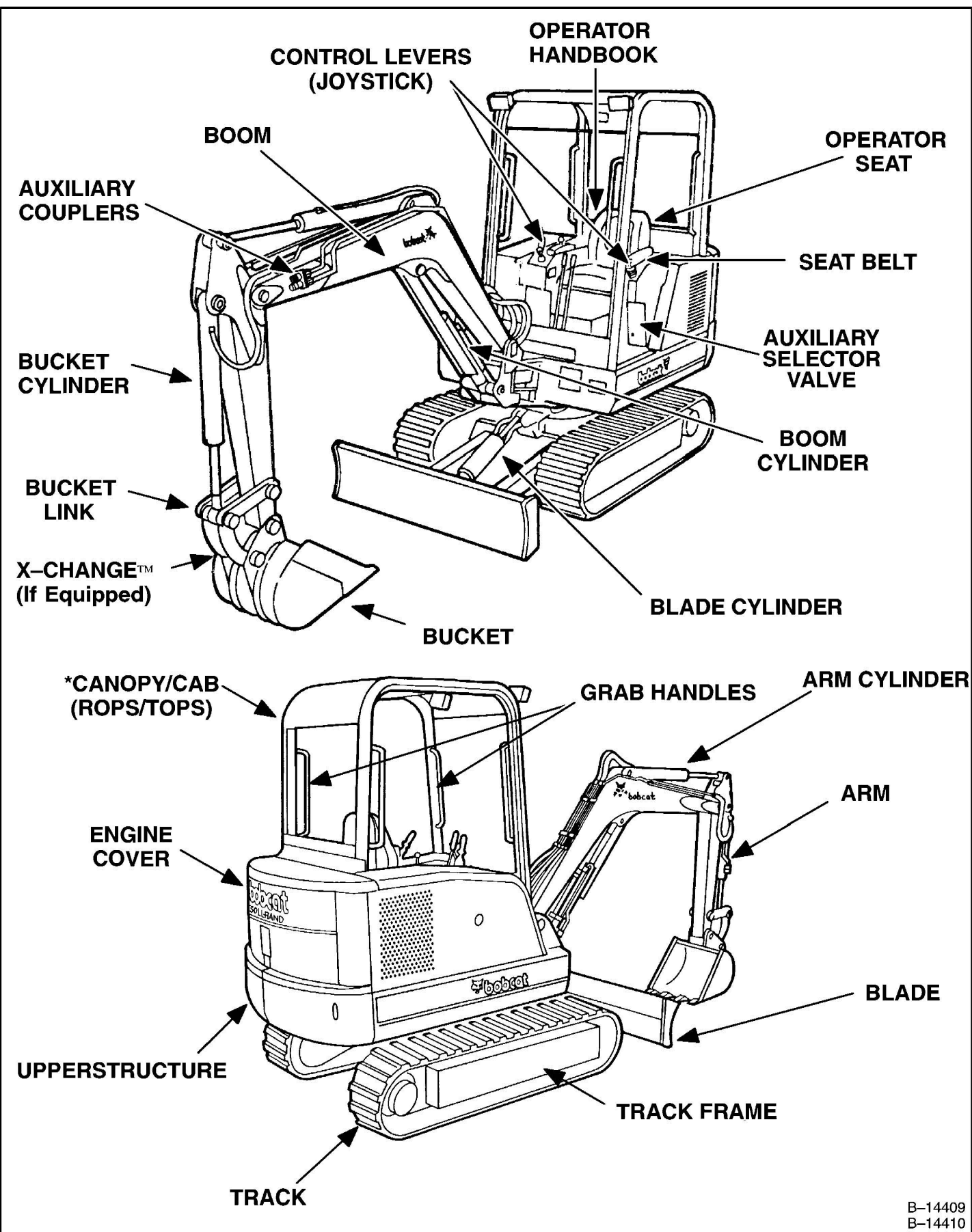


 Fasten seat belt securely.
 Operate controls only from operator's seat.

SAFETY EQUIPMENT

1. Seat Belt
2. Swing Lock
3. ROPS/TOPS Canopy or Cab
4. Machine Safety Signs
5. Safety Tread
6. Grab Handles

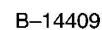
HYDRAULIC EXCAVATOR IDENTIFICATION



B-14409
B-14410

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

Follow the instructions on all the Machine Signs (Decals) that are on the excavator. Replace any damaged machine signs and be sure they are in the correct locations. Machine signs are available from your Bobcat Excavator dealer.



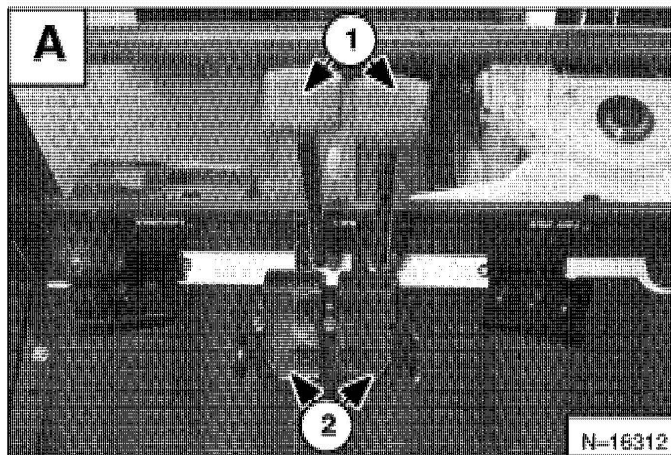
STEERING LEVERS/FOOT PEDALS

Forward And Reverse Travel

NOTE: The following procedures describe forward, reverse, right & left as though you were seated in the operator's seat.

Put the blade so that it is at the front of the machine as you sit in the operator's seat. Slowly push both steering levers* (Item 1) [A] forward for forward travel. Pull both steering levers backward for reverse travel.

*There are also foot pedals (Item 2) [A] to operate the steering levers in the same manner.



WARNING

AVOID INJURY OR DEATH

- Check the blade location before traveling. When the blade is to the rear, operate the steering levers/foot pedals in the opposite direction to when the blade is in the front.
- Move the steering levers/foot pedals slowly. Abrupt lever motion will cause the machine to jerk.

W-2235-0396

Turning

Right Turn

Push the left steering lever forward to turn to the right [B] while traveling in a forward direction.

Pull the left steering lever backward to turn to the right [D] while traveling in a reverse direction.

Counter-Rotation Turn Right

Push the left steering lever forward and pull the right steering lever backward [F].

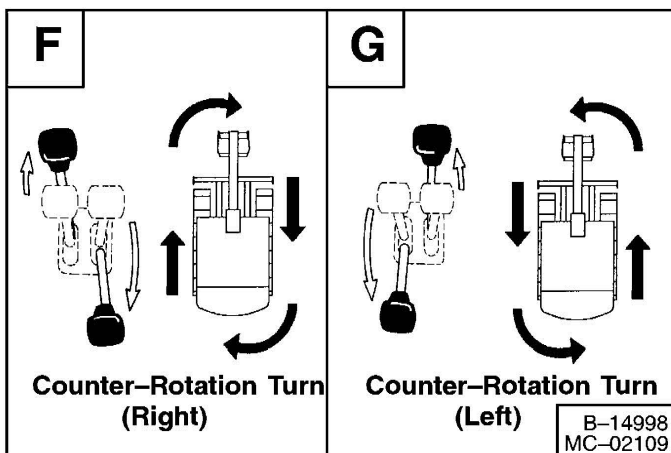
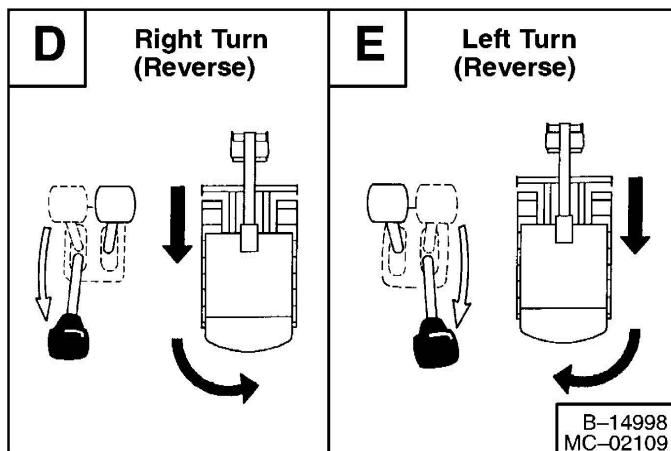
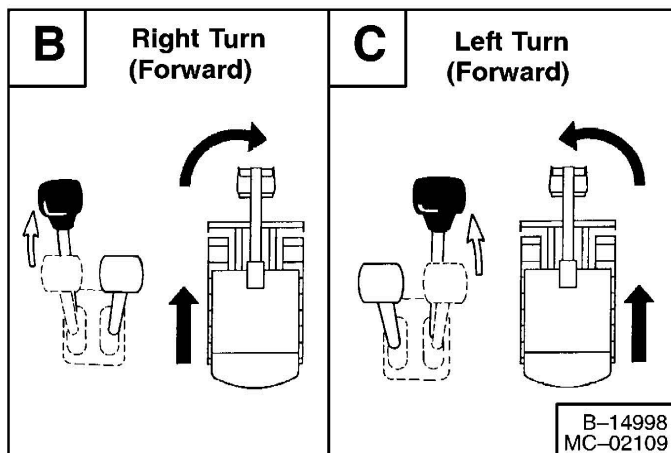
Left Turn

Push the right steering lever forward to turn to the left [C] while traveling in a forward direction.

Pull the right steering lever backward to turn to the left [E] while traveling in a reverse direction.

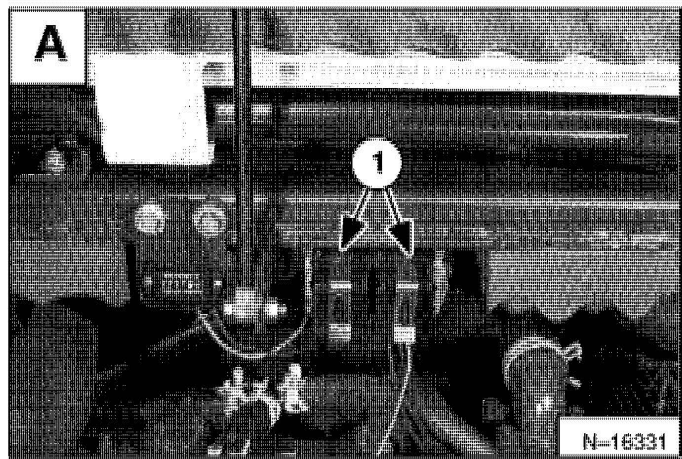
Counter-Rotation Turn Left

Push the right steering lever forward and pull the left steering lever backward [G].

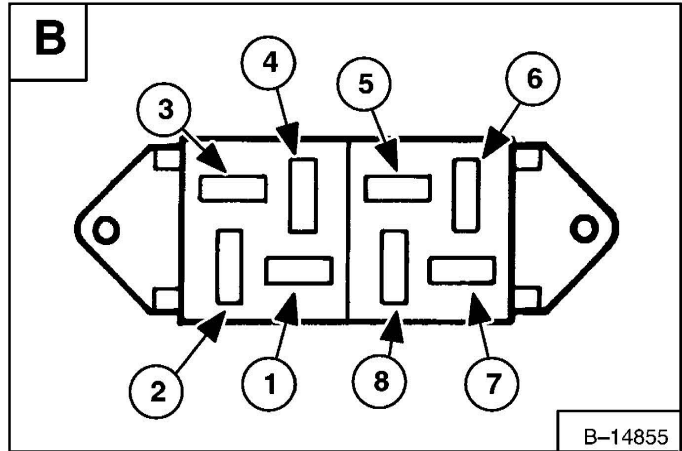


FUSES

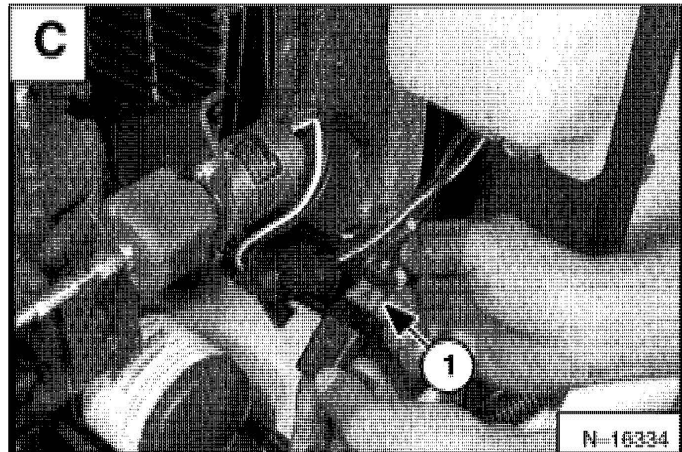
The fuses are located in the engine compartment. Remove the two fuse block covers (Item 1) [A].



1. **FUSE – 10 AMP:** This fuse supplies power to the instrument circuit [B].
2. **FUSE – 10 AMP:** This fuse supplies power to timer solenoid [B].
3. **FUSE – 20 AMP:** This fuse supplies power to the start circuit [B].
4. **FUSE – 15 AMP:** This fuse supplies power to the cab wiring (if equipped) [B].
5. **FUSE – 15 AMP:** This fuse supplies power to any accessory that has constant power [B].
6. **FUSE – 20 AMP:** This fuse supplies power to the horn and heater motor (if equipped) [B].
7. **FUSE – 5 AMP:** This fuse supplies power to the optional wiper motor [B].
8. **FUSE – 20 AMP:** This fuse supplies power to the lights, and any future functions and/or attachments.



The fuse (Item 1) [C] is a 25 AMP fuse that is used on the timer solenoid in addition to (Item 2) [B].



SEAT

The operator seat can be adjusted as follows:
(Adjustments should be made with the operator seated).

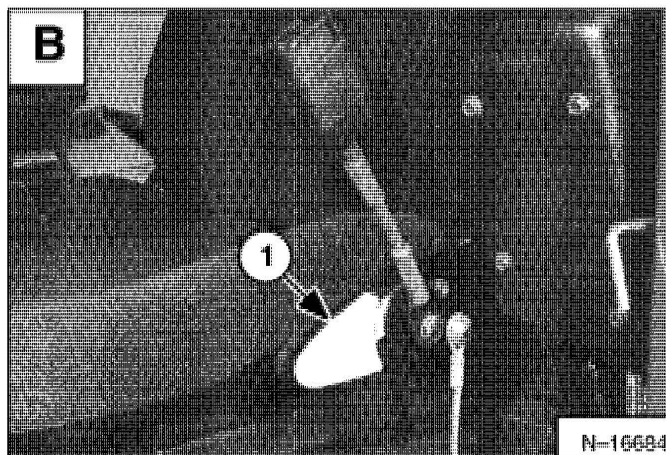
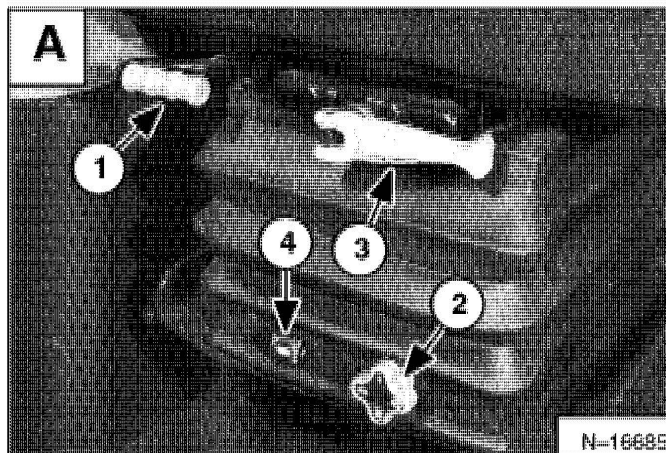
Release the seat adjustment lever (Item 1) [A]. Slide the seat backward or forward for easy reach of the machine controls.

Select the height position number at the bottom of the knob (Item 2) [A].

Turn the weight adjustment handle (Item 3) [A] until the number in the window (Item 4) [A] matches the number on the bottom of the knob (Item 2) [A].

NOTE: Turn the handle (Item 3) [A] clockwise (as viewed in the photo) to increase weight adjustment, counterclockwise to decrease weight adjustment.

Lift the lever (Item 1) [B] up to adjust the back of the seat for operator comfort.



OPERATOR'S HANDBOOK

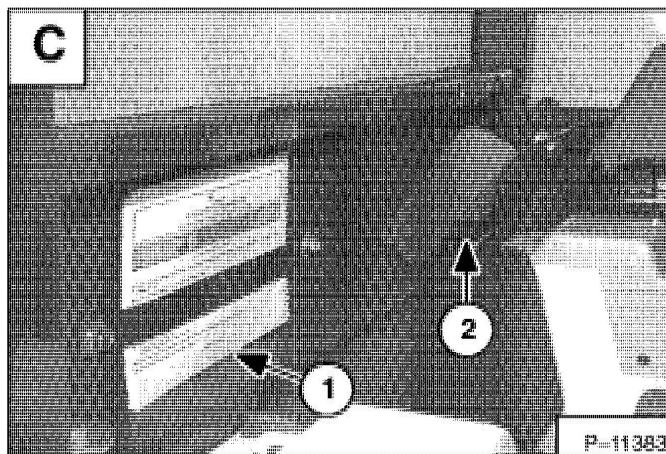
The Operator's Handbook (Item 1) [C] is a quick reference for operating the hydraulic excavator and is located behind the operator seat on the right side of the cab/canopy.

Read the Operation & Maintenance Manual and Operator's Handbook before operating the hydraulic excavator.

STORAGE COMPARTMENT

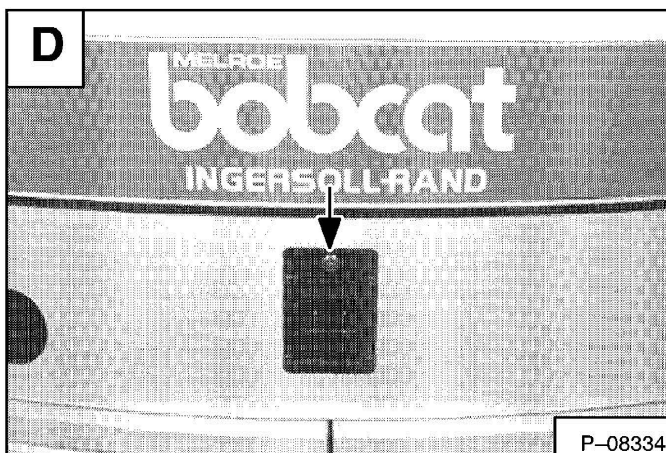
The locking storage compartment (Item 2) [C] is located behind the operator seat at the left side of the cab/canopy. The storage compartment lock uses the same key as the start switch. The Operation & Maintenance Manual is stored in the storage compartment.

Read the Operation & Maintenance Manual and Operator's Handbook before operating the hydraulic excavator.



ENGINE COVER

The engine cover is lockable and uses the same key as the start switch [D].



EXTENDABLE ARM (Cont'd)

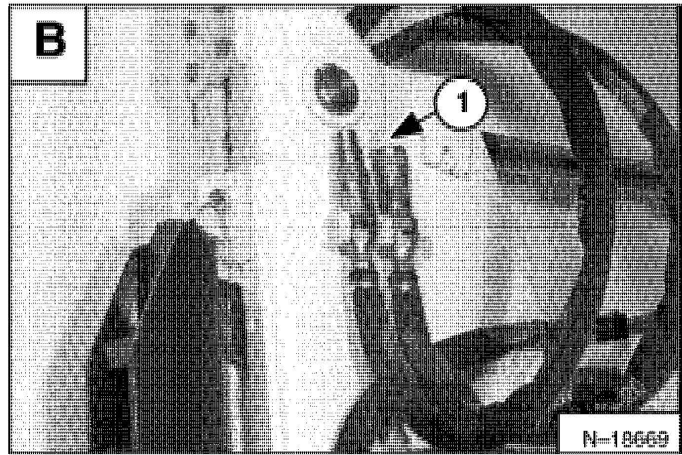
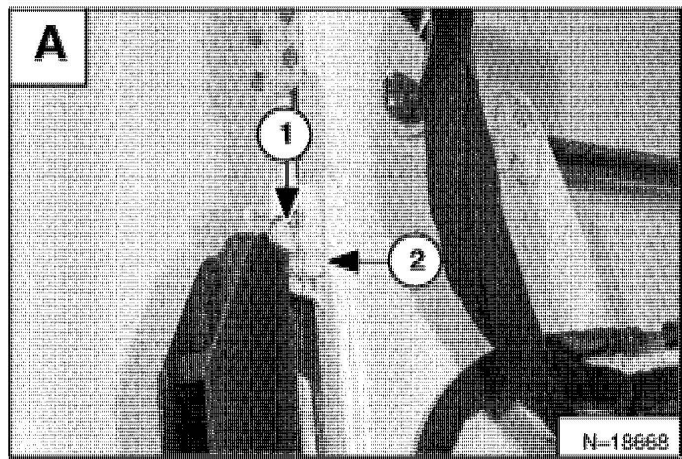
Operation (Cont'd)

Install the lock pin (Item 1) **[A]** through the bucket cylinder mount. Install the retaining pin (Item 2) **[A]** in the lock pin.

Disconnect the hoses from the quick couplers. (See Page 13.)

Put the hoses (Item 1) **[B]** in the storage position.

Install the attachment hydraulic lines to the Excavator auxiliary quick couplers. (See Page 13.)



CONTROL LEVERS (JOYSTICKS) (Cont'd)

The work equipment is operated by using the left and right control levers (joysticks) [A] & [B]. (See Page 56 and 57 for ISO/Standard Control Pattern change information.)

Operation Of Left Control Lever (Standard)

Boom and Swing.

The left lever is used to operate the boom and swing the upperstructure [A]:

1. Boom lower.
2. Boom lower and swing right.
3. Swing right.
4. Boom raise and swing right.
5. Boom raise.
6. Boom raise and swing left.
7. Swing left.
8. Boom lower and swing left.

IMPORTANT

Before swinging the upperstructure, make sure the swing lock is disengaged.

I-2051-0189

Operation Of Right Control Lever (Standard)

Arm and Bucket.

The right lever is used to operate the arm and bucket [B]:

1. Arm out.
2. Arm out and bucket dump.
3. Bucket dump.
4. Arm in and bucket dump.
5. Arm in.
6. Arm in and bucket curl.
7. Bucket curl.
8. Arm out and bucket curl.

! WARNING

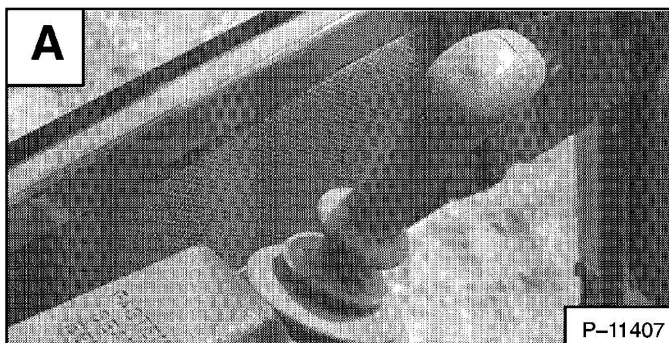
AVOID INJURY OR DEATH

Before leaving the machine:

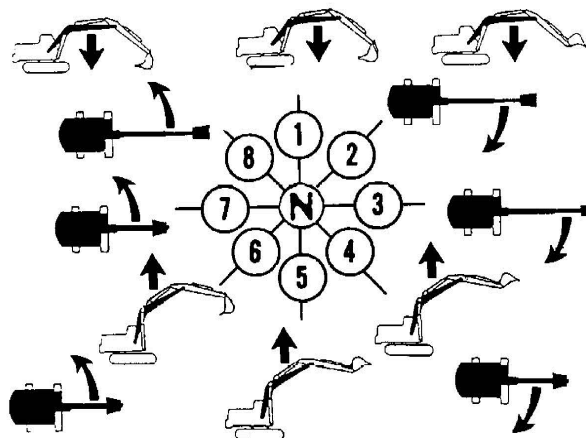
- Lower the work equipment to the ground.
- Lower the blade to the ground.
- Stop the engine & remove the key.

W-2196-0595

A



P-11407

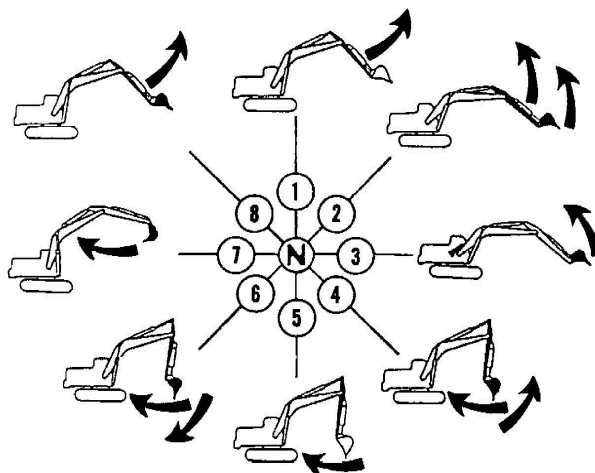


PI-02864

B



P-11413



PI-02863

BLADE CONTROL LEVER

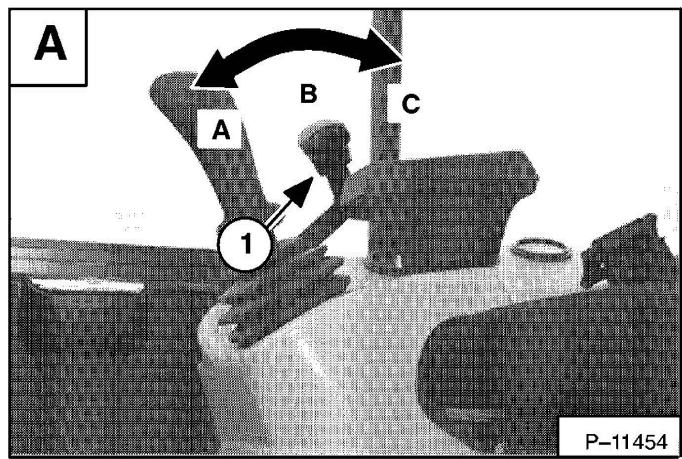
The lever (Item 1) [A] is used to raise and lower the blade.

Position A – Push Forward – Lowers the blade.

Position B – Neutral – Blade is stopped and held in position.

Position C – Pull Backward – Raises the blade.

NOTE: Keep the blade lowered when digging to help stabilize machine.



CONTROL LEVER (JOYSTICK) LOCK

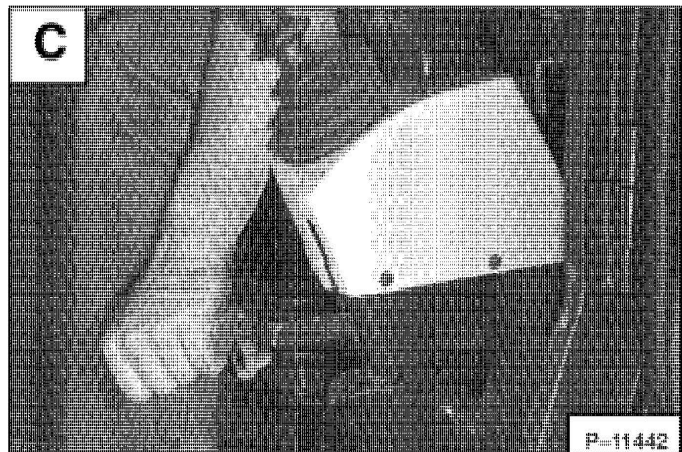
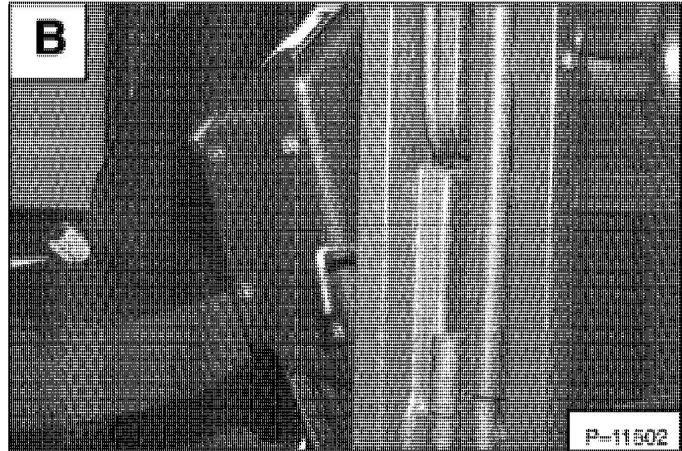
A control lock switch (located in the left hand console) disconnects the hydraulics from the joystick control levers when the control console is in the raised position [B]. (The joystick control levers will not operate with the console raised.)

NOTE: The travel levers, blade lever, boom swing pedal and the auxiliary functions are NOT affected by the control lock.

NOTE: Positioning the key in the run position while the engine is stopped activates the accumulator to provide short term control lever operation.

If the engine is stopped, turn the key to the run position and lower the boom/arm to the ground.

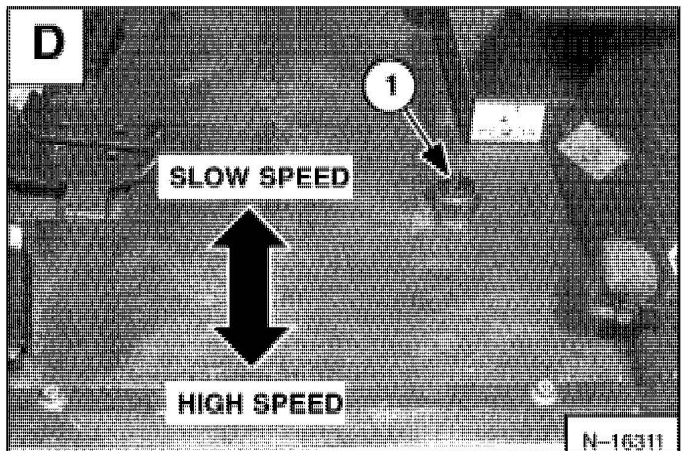
Lower the control console to engage the joystick control levers [C].



TWO SPEED FOOT SWITCH

Slow Speed: When the switch (Item 1) [D] is in the up position (Normal).

High Speed: When the switch (Item 1) [D] is pushed and held down.



ATTACHMENTS (Pin On)

Removal

NOTE: Removal and Installation of the bucket is shown. The procedure is the same for other attachments. Disconnect any hydraulic hoses that are connected to the auxiliary couplers before removing any attachments (breaker, auger, etc.).

WARNING

AVOID INJURY OR DEATH

Stop the machine on a firm flat surface. When removing or installing attachments (such as a bucket), always have a second person in the operator's seat, give clear signals and work carefully.

W-2140-0189

Select a flat level surface. Put the bucket on the ground.

Remove the fasteners from the pivot pins (Items 1 & 2) [A].

Remove the pivot pins and keep them clean. Do not damage the dust seals in the arm and the link.

Installation

Install the arm into the bucket and align the hole. Install the pivot pin (Item 1) [A].

Attach the link to the other hole and install the pivot pin (Item 2) [A].

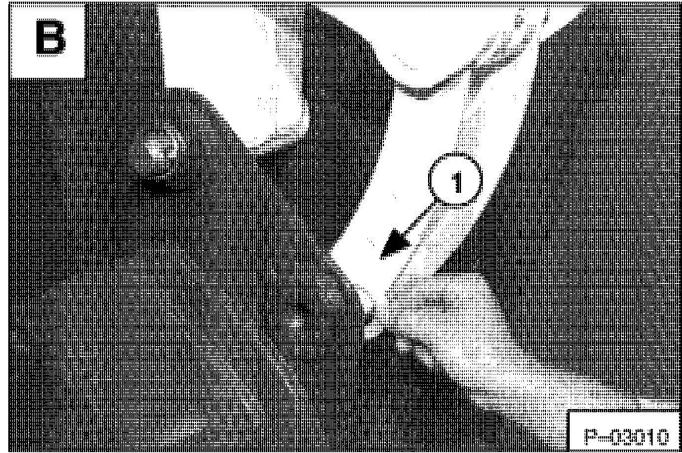
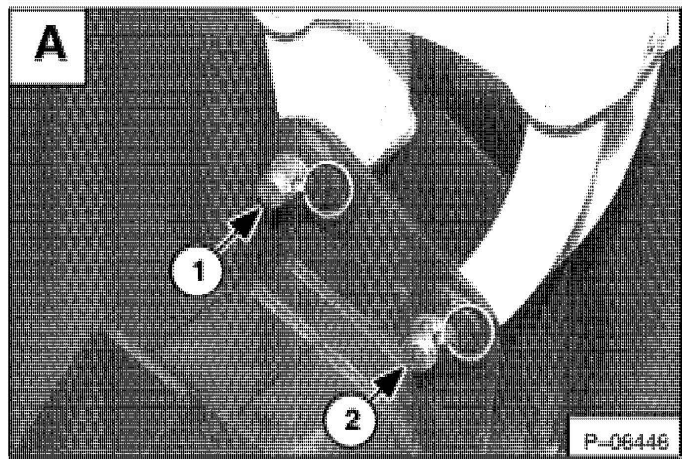
NOTE: Install shims (Item 1) [B] as needed to eliminate any gap between the bucket and the arm and the links.

Install the fasteners. Add grease to the pivot pins before operation.

WARNING

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

W-2052-0100

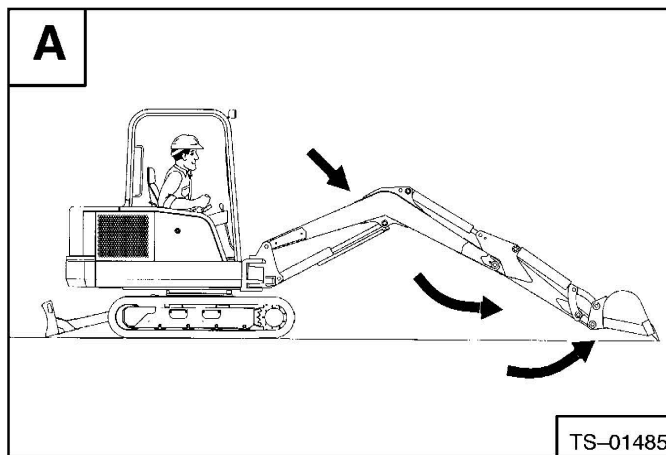


OPERATING PROCEDURE (Cont'd)

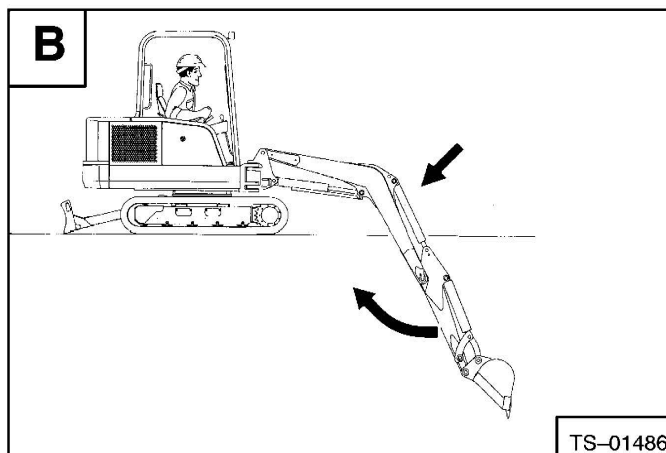
Excavating

Lower the blade to provide machine stability.

Extend the arm, lower the boom and open the bucket [A].



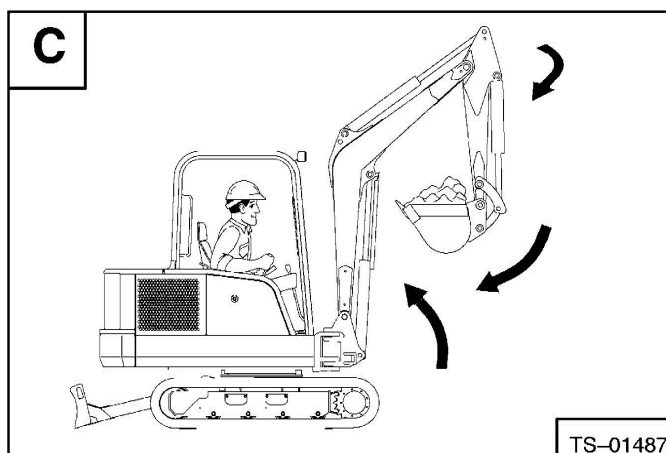
Retract the arm, while lowering boom and curling the bucket [B].




Raise the boom, retract the arm and curl the bucket [C].

Rotate the upperstructure.

NOTE: Do not allow the bucket teeth to contact the ground when swinging the upperstructure.



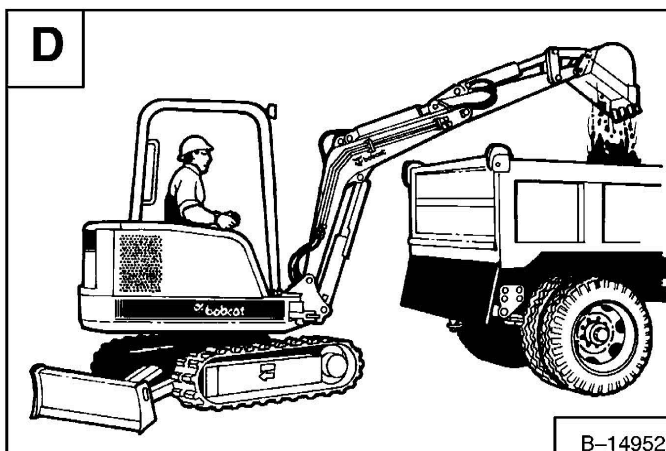


WARNING

Keep all bystanders 20 feet (6 m) away from equipment when operating. Contact with moving parts, a trench cave-in or flying objects can cause injury or death.

W-2119-0788

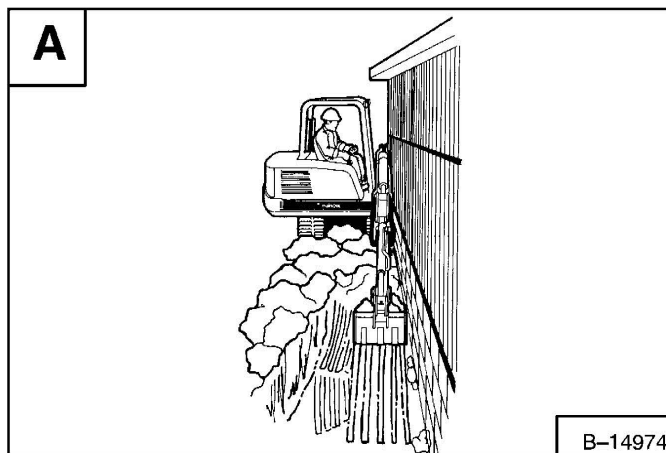
Extend the arm and uncurl the bucket to dump the spoil into a pile or truck [D].



OPERATING PROCEDURE (Cont'd)

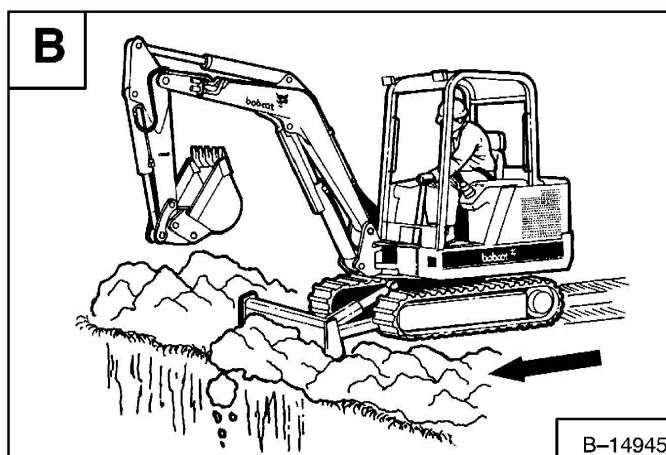
Boom Offset (Cont'd)

The boom offset allows the operator to dig close to buildings and other structures [A].



Back Filling

Use the blade to back fill the trench or hole after the excavating has been done [B].



Driving The Excavator

When operating on uneven ground, operate as slow as possible and avoid sudden changes in direction.

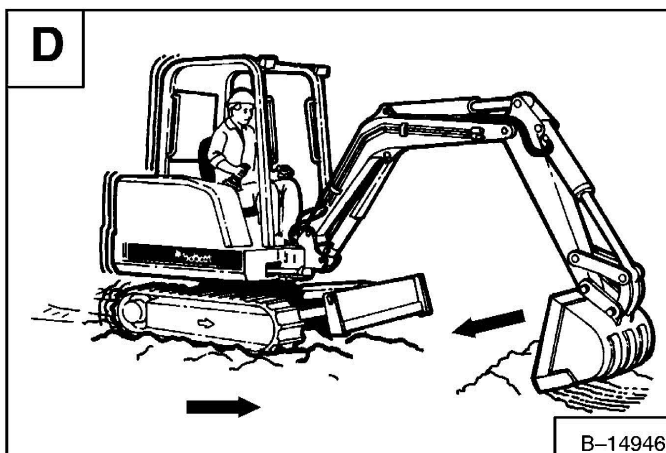
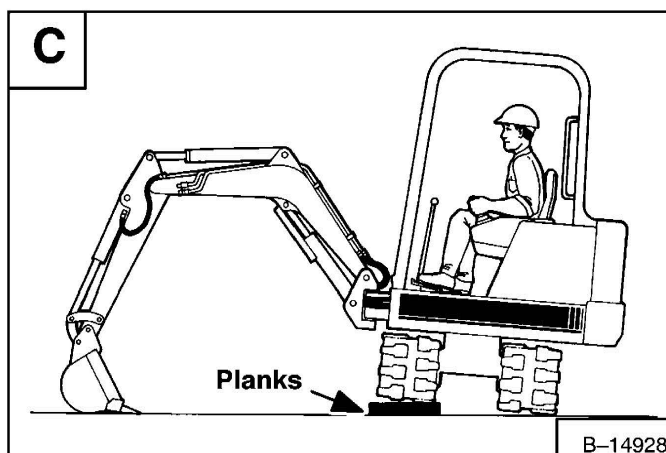
Avoid traveling over objects such as rocks, trees, stumps, etc.

When working on wet or soft ground, put planks on the ground to provide a solid base to travel on and prevent the excavator from getting stuck.

If one or both tracks have become stuck in soft or wet ground, raise one track at a time by turning the upperstructure and pushing the bucket against the ground [C].

Put planks under the tracks and drive the excavator to dry ground.

The bucket may also be used to *pull* the excavator, by extending the arm and lowering the boom as if the operator were going to dig [D].



OPERATING PROCEDURE (Cont'd)

Operating On Slopes (Cont'd)

When operating on a slope it is recommended to level the work area [A].

If this is not possible, the following procedures should be used:

Do not work on slopes which are over 15 degrees.

Slow down the work cycle.

Avoid working with the tracks across the slope as this reduces stability and increases the tendency for the machine to slide. Position the excavator with the blade downhill and lowered.

Avoid swinging or extending the bucket farther than necessary in a down hill direction. When you must swing the bucket downhill, keep the arm low and skid the bucket downhill.

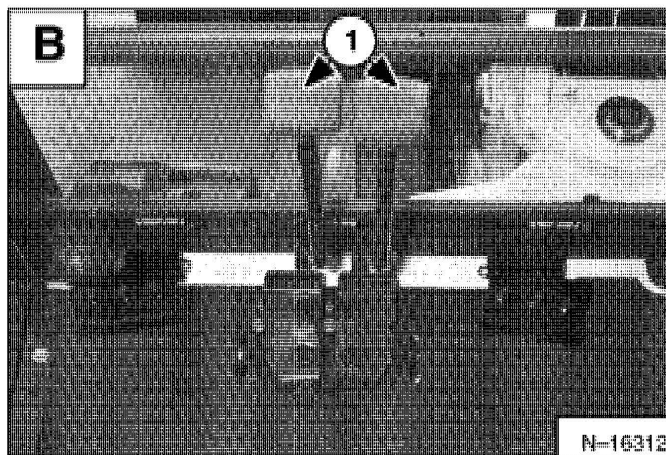
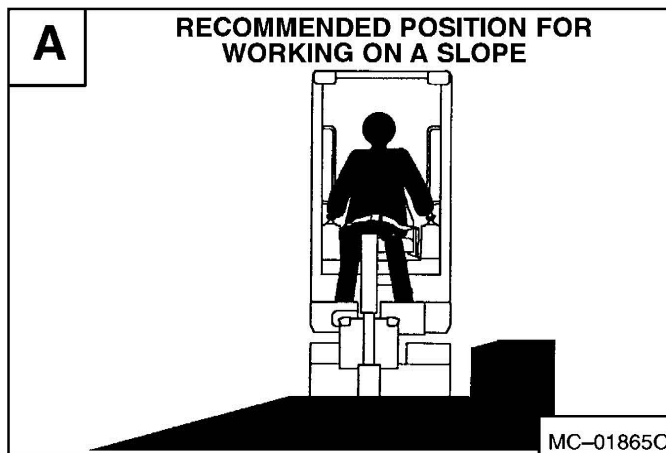
When working with the bucket on the uphill side, keep the bucket as close to the ground as possible. Dump the spoil far enough away from the trench or hole to prevent the possibility of a cave in.

To brake the machine when going down a slope, move the steering levers (Item 1) [B] to the *Neutral* position. This will engage the hydrostatic braking.

When the engine stops on a slope, move the steering levers to the neutral position. Lower the boom/bucket.

NOTE: If the engine stops, the left hand control console must be in the locked down position, and the key switch in the ON position, to activate the accumulator pressure to lower the boom/bucket (attachments) to the ground.

Start the engine and resume the operation.



MAINTENANCE SAFETY

WARNING

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

W-2003-0199

 **Safety Alert Symbol:** This symbol is used for important safety messages. When you see this symbol, follow the safety message to avoid personal injury or death.

CORRECT




B-10731

 **Never service the Bobcat Hydraulic Excavator without instructions.**

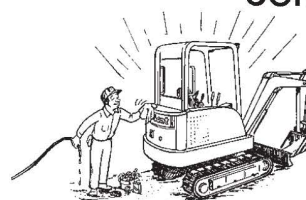
CORRECT




B-14148

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

CORRECT





B-14142

 **Cleaning and maintenance are required daily.**

WRONG





B-14147

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

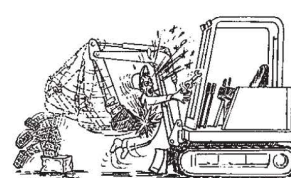
WRONG





B-14141

 **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-14145

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

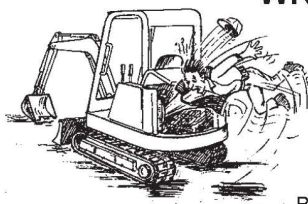
WRONG






B-14146

 **Stop, cool and clean engine of flammable materials before checking fluid.**
 **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-14143

 **Keep body, jewelry and clothing away from moving parts, electrical contacts, hot parts and exhaust.**
 **Wear eye protection to guard from battery acid, compressed springs, fluids under pressure and flying debris when engines are running or tools are used. Use eye protection approved for type of welding.**
 **Keep rear door closed except for service. Close and latch door before operating the excavator.**

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 this manual must be performed **ONLY BY QUALIFIED BOBCAT SERVICE PERSONNEL**. Always use **genuine Bobcat replacement parts**.

MSW20-0500