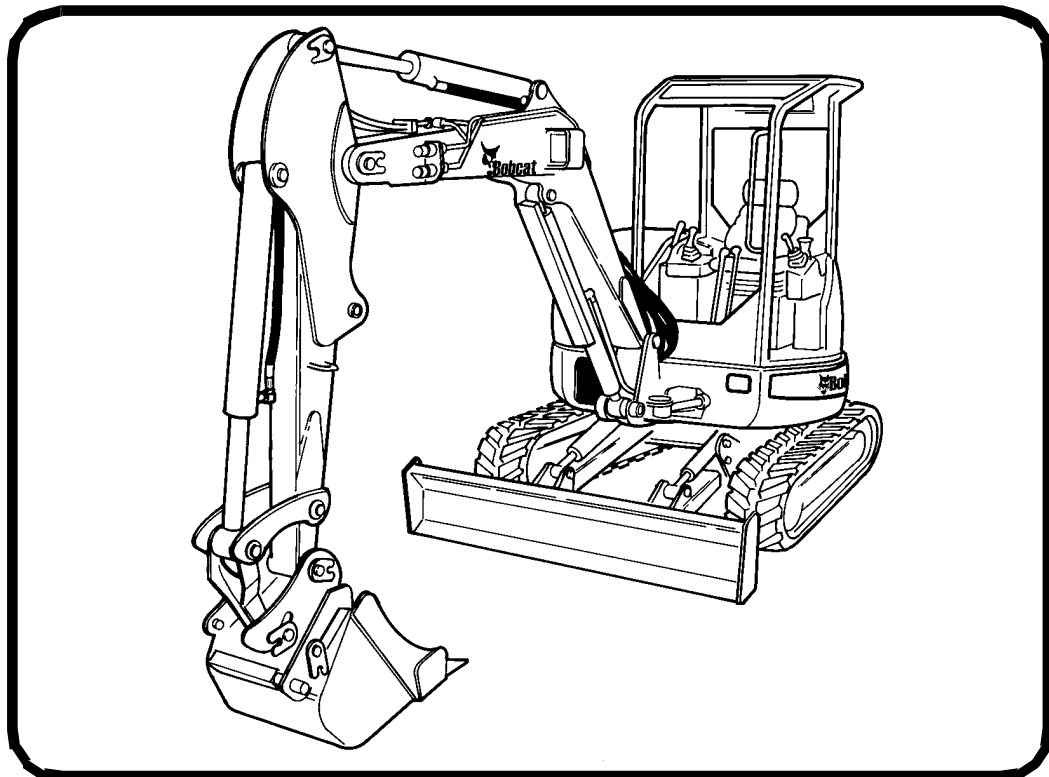




Bobcat®

Operation & Maintenance Manual 435 Compact Excavator

S/N AACB11001 & Above
S/N AA8911001 & Above
S/N AACD11001 & Above
S/N AA8A11001 & Above



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OPERATOR SAFETY WARNING



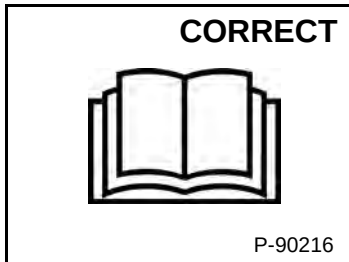
WARNING

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

W-2001-0502

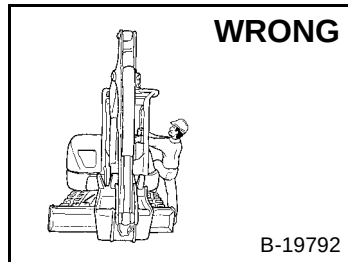


Safety Alert Symbol: This symbol with a warning statement, means: "Warning, be alert! Your safety is involved!" Carefully read the message that follows.



⚠ Never operate without instructions.

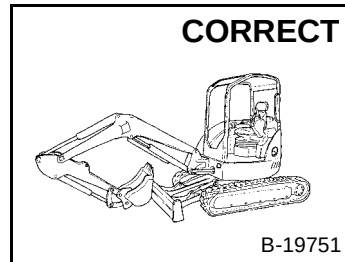
⚠ Read machine signs, and Operation & Maintenance Manual, and Operator's Handbook.



⚠ Do not grasp control handles when entering canopy or cab.

⚠ Be sure controls are in neutral before starting.

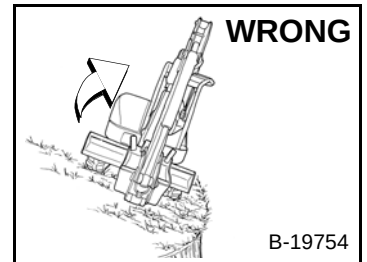
⚠ Sound horn and check behind machine before starting.



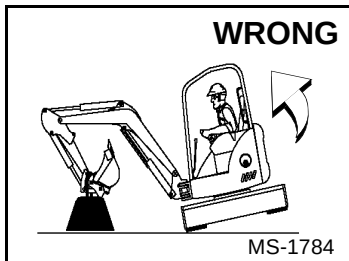
⚠ Never operate without approved canopy or cab.

⚠ Never modify equipment.

⚠ Never use attachments not approved by Bobcat Company.

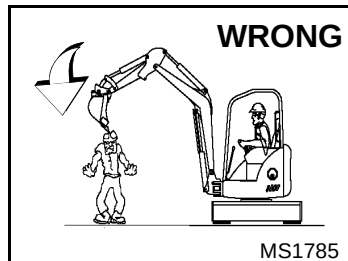


⚠ Avoid steep areas or banks that could break away.



⚠ Use caution to avoid tipping - do not swing heavy load over side of track.

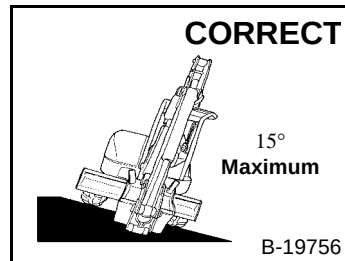
⚠ Operate on flat, level ground.



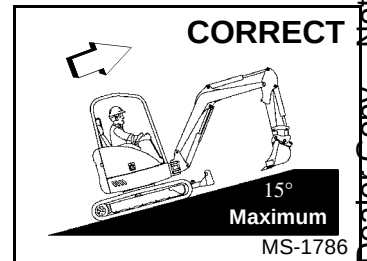
⚠ Keep bystanders out of maximum reach area.

⚠ Do not travel or turn with bucket extended.

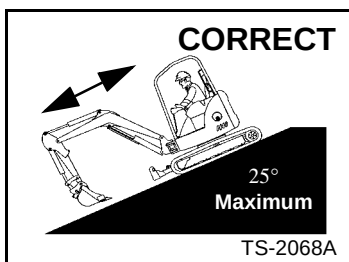
⚠ Never carry riders.



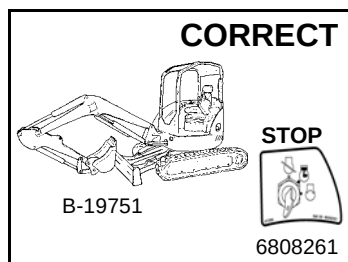
⚠ Never exceed a 15° slope to the side.



⚠ Never travel up a slope that exceeds 15°.

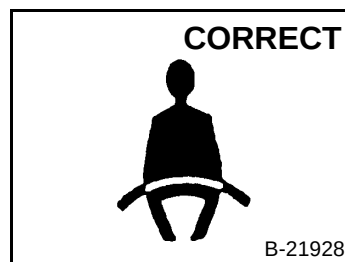


⚠ Never exceed 25° when going down or backing up a slope.



⚠ 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. Slew Lock
3. ROPS/TOPS Canopy or Cab
4. Safety Signs (Decals)
5. Safety Tread
6. Grab Handles

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OSW23-0409



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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

YOUR BOBCAT EXCAVATOR DEALER:

ADDRESS:

PHONE:

Bobcat Company
P.O. Box 128
Gwinner, ND 58040-0128

Bobcat Company Europe
Drève Richelle 167
B-1410 WATERLOO
Belgium

FOREWORD

SAFETY & TRAINING
RESOURCES

OPERATING
INSTRUCTIONS (OI)

PREVENTIVE
MAINTENANCE (PM)

SYSTEM SETUP
& ANALYSIS

MACHINE SIGN
TRANSLATIONS (MST)

SPECIFICATIONS
(SPEC)

WARRANTY

ALPHABETICAL
INDEX

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Bobcat®

FOREWORD

FOREWORD

This Operation & Maintenance Manual was written to give the owner/operator instructions on the safe operation and maintenance of the Bobcat Excavator. READ AND UNDERSTAND THIS OPERATION & MAINTENANCE MANUAL BEFORE OPERATING YOUR MACHINE. If you have any questions, see your Bobcat dealer.

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EXCAVATOR IDENTIFICATION	VIII
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BOBCAT COMPANY IS ISO 9001 CERTIFIED



ISO 9001 is an international standard that specifies requirements for a quality management system that controls the processes and procedures which we use to design, develop, manufacture and distribute Bobcat products.

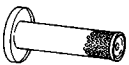
British Standards Institute (**BSI**) is the Certified Registrar Bobcat Company chose to assess the Company's compliance with the ISO 9001 at Bobcat's manufacturing facilities in Gwinner and Bismarck, North Dakota (U.S.A.), Pontchateau (France), Dobris (Czech Republic) and the Bobcat corporate offices (Gwinner, Bismarck & West Fargo) in North Dakota. Only certified assessors, like BSI, can grant registrations.

ISO 9001 means that as a company we say what we do and do what we say. In other words, we have established procedures and policies, and we provide evidence that the procedures and policies are followed.

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.

REGULAR MAINTENANCE ITEMS

	ENGINE OIL FILTER (6 Pack) 6675517		BATTERY 6673865
	FUEL FILTER 6667362 FUEL FILTER, inline 6633977		FLUID, Hydraulic / Hydrostatic 6903117 - (2.5 Gal.) 6903118 - (5 Gal.) 6903119 - (55 Gal.)
	AIR FILTER, Outer 6666375		RADIATOR CAP 6682274
	AIR FILTER, Inner 6666376		PROPYLENE GLYCOL ANTI-FREEZE, Premixed [-34° F (-37°C)] 6724094
	PRIMARY HYDRAULIC FILTER 6668819 CASE DRAIN HYDRAULIC FILTER 6681012 FAN CASE DRAIN HYDRAULIC FILTER 6681012		PROPYLENE GLYCOL ANTI-FREEZE, Concentrate 6724354
MOTOR OIL 6903105 SAE 15W/40 CE/SG (12 qt.) 6903106 SAE 15W/40 CE/SG (1 Gal.) 6903113 SAE 15W/40 CE/SG (2.5 Gal.) 6903107 SAE 10W/30 CE/SG (12 qt.) 6903108 SAE 10W/30 CE/SG (1 Gal.) 6903112 SAE 10W/30 CE/SG (2.5 Gal.)		6903109 SAE 30W CE/SG (12 qt.) 6903110 SAE 30W CE/SG (1 Gal.) 6903111 SAE 30W CE/SG (2.5 Gal.)	

NOTE: Always verify Part Numbers with your Bobcat dealer.

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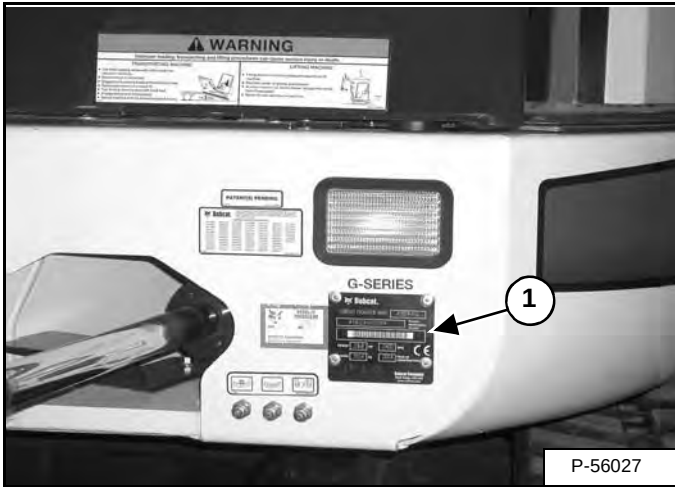
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SERIAL NUMBER LOCATIONS

Always use the serial number of the excavator when requesting service information or when ordering parts. Early or later models (identification made by serial number) may use different parts, or it may be necessary to use a different procedure in doing a specific service operation.

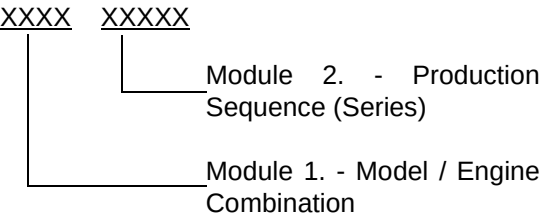
Excavator Serial Number

Figure 1



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

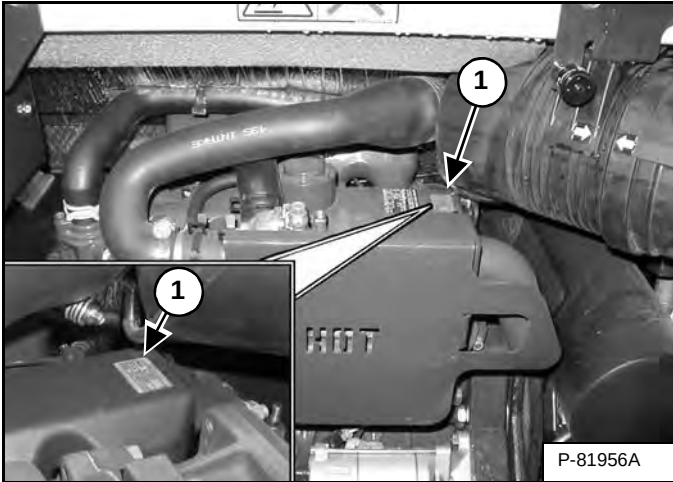
Explanation of Excavator Serial Number:



- 1. The four digit Model/Engine Combination Module number identifies the model number and engine combination.
- 2. The five digit Production Sequence Number identifies the order which the excavator is produced.

Engine Serial Number

Figure 2



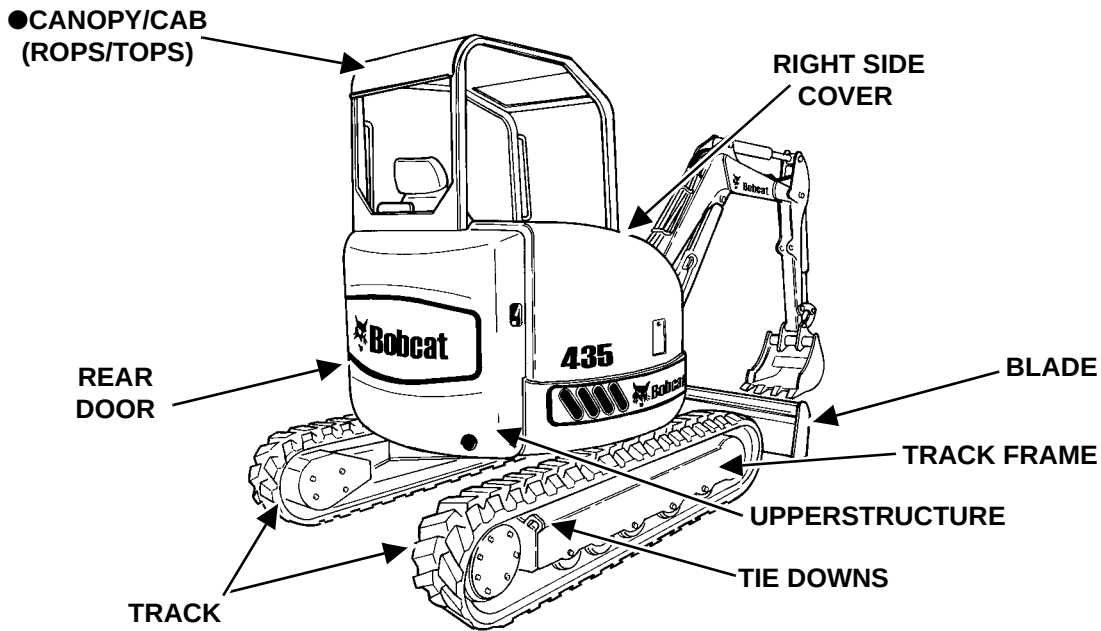
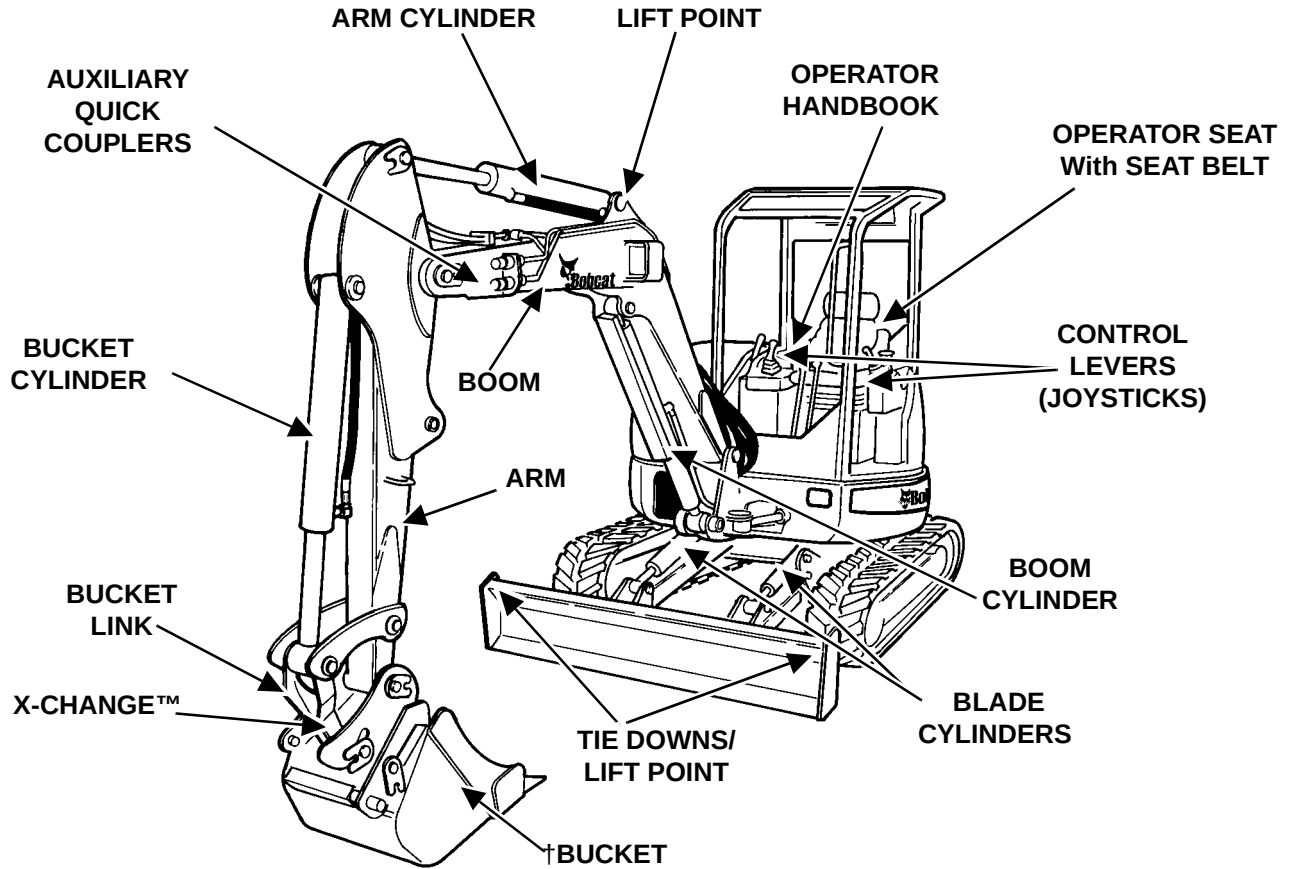
The engine serial number (Item 1) is located on the engine in the location shown [Figure 2].

DELIVERY REPORT

Figure 3

The delivery report must be filled out by the dealer and signed by the owner or operator when the Bobcat Excavator is delivered. An explanation of the form must be given to the owner. Make sure it is filled out completely [Figure 3].

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B19745
B19897

† BUCKET - Several different buckets and other attachments are available for the Bobcat Excavator.

● ROPS, TOPS - (Roll Over Protective Structure / Tip Over Protective Structure) as standard equipment. The ROPS/TOPS meets ISO 3471 and ISO 12117.

FEATURES, ACCESSORIES AND ATTACHMENTS

Standard Items

Model 435 Bobcat Excavators are equipped with the following standard items:

- Canopy with ROPS/TOPS Approval
- 76 inch (1930 mm) Dozer Blade
- 15.7 inch (400 mm) Rubber Tracks
- Two-Speed Travel
- Auxiliary Hydraulics
- Hydraulic and Travel Control Lockouts
- Blade Float
- Work Lights - Boom and Frame Mounted
- Engine and Hydraulic system Monitor with Shut Down
- Horn
- Hydraulic Joystick Controls
- ISO/STD Control Pattern Selection Feature
- Suspension Seat
- Spark Arrestor Muffler
- Advanced Diagnostics
- X-Change™

Subject to change without notice.

Options and Accessories

Below is a list of some equipment available from your Bobcat Excavator dealer as Dealer and/or Factory Installed Accessories and Factory Installed Options. See your Bobcat dealer for other available options, accessories and attachments.

- Enclosed Cab With Heater and A.C.
- Enclosed Cab With Heater
- Travel Motion Alarm
- Keyless Start
- Canopy/Cab Mounted Light
- Catalytic Exhaust Purifier
- Top Guard Kit (FOGS)
- Steel Track
- Long Arm
- Special Application Cab
- Direct to Tank Auxiliary Hydraulics
- Secondary Front Auxiliary Hydraulics
- Radio Ready Kit (Radio Sold Separately)
- Angle Blade
- Strobe
- Beacon
- Counter Weight

Attachments

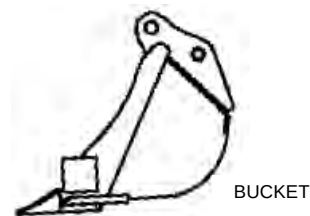
These and other attachments are approved for use on this model excavator. Do not use unapproved attachments. Attachments not manufactured by Bobcat may not be approved.

The versatile Bobcat Excavator quickly turns into a multi-job machine with a variety of attachments.

See your Bobcat dealer for more details on these and other attachments and field accessories.

- Heavy duty trenching bucket
- Trenching buckets
- Grading bucket
- Auger
- Breaker
- Hydraulic Clamp
- 3-Tined Grapple
- Compactor
- Power Tilt
- Ripper
- 52 in. (1321 mm) Grading blade
- Hydro tilt
- Bucket Clam
- Packer wheel
- Rotating grapple

Buckets Available



Many bucket styles, widths and different capacities are available for a variety of different applications. See your Bobcat dealer for the correct bucket for your Bobcat Excavator and application.

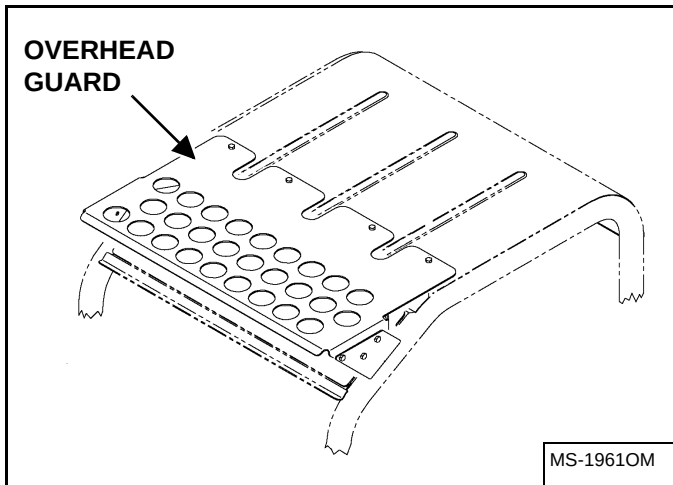
- 13 in. (330 mm) Trenching
- 18 in. (457 mm) Trenching
- 24 in. (610 mm) Trenching
- 24 in. (610 mm) Heavy duty trenching
- 30 in. (760 mm) Trenching
- 36 in. (914 mm) Trenching
- 39 in. (991 mm) Trenching
- 52 in. (1321 mm) Grading

FEATURES, ACCESSORIES AND ATTACHMENTS (CONT'D)

Falling Object Guards (FOGS)

The FOGS provides additional protection from smaller objects which can fall on the canopy or cab.

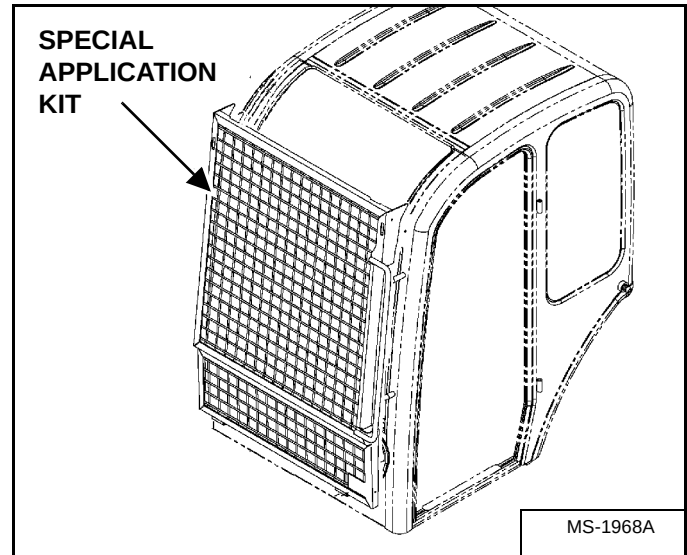
For the canopy or cab to meet the FOGS (ISO 10262 - level 1), the excavator must have the overhead guard *and* the Special Applications Kit installed.



Special Applications Kit

The Special Applications Kit can be installed when certain attachments are used on the excavator to restrict material from entering the canopy or cab openings.

The Special Applications Kit includes a upper and lower screen guard.



Special Applications Kit Inspection And Maintenance

The Special Applications Kit must be regularly inspected and maintained. Inspect the screen for damage. Replace parts as necessary.

SAFETY & TRAINING RESOURCES

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SAFETY & TRAINING RESOURCES

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SAFETY INSTRUCTIONS

Before Operation

Carefully follow the operating and maintenance instructions in this manual.

The Bobcat excavator is highly maneuverable and compact. It is rugged and useful under a wide variety of conditions. This presents an operator with hazards associated with off highway, rough terrain applications, common with Bobcat excavator usage.

The Bobcat excavator has an internal combustion engine with resultant heat and exhaust. All exhaust gases can kill or cause illness so use the excavator with adequate ventilation.

The dealer explains the capabilities and restrictions of the Bobcat excavator and attachment for each application. The dealer demonstrates the safe operation according to Bobcat instructional materials, which are also available to operators. The dealer can also identify unsafe modifications or use of unapproved attachments. The attachments and buckets are designed for a Rated Lift Capacity. They are designed for secure fastening to the Bobcat excavator. The user must check with the dealer, or Bobcat literature, to determine safe loads of materials of specified densities for the machine - attachment combination.

The following publications and training materials 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 and attachment is in safe operating condition.
- The Operation & Maintenance Manual delivered with the machine or attachment gives 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 is fastened to the operator cab of the excavator. It's brief instructions are convenient to the operator. The Handbook is available from your dealer in an English edition or one of many other languages. See your Bobcat dealer for more information on translated versions.
- The AEM Safety Manual delivered with the machine gives general safety information.
- The Compact Excavator Operating Training Course is available through your Bobcat dealer. This course is intended to provide rules and practices of correct operation of the Bobcat excavator. The course is available in English and Spanish versions.
- Service Safety Training Courses are available from your Bobcat dealer. They provide information for safe and correct service procedures.
- See the PUBLICATIONS AND TRAINING RESOURCES Page in this manual or your Bobcat dealer for Service and Parts Manuals, printed materials, videos, or training courses available. Also check the Bobcat web sites www.training.bobcat.com or www.bobcat.com

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.



Call Before You Dig
Dial 811 (USA Only)
1-888-258-0808 (USA & Canada)

When you call, you will be directed to a location in your state / province, or city for information about buried lines (telephone, cable TV, water, sewer, gas, etc.).

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SI EXC-0208

SAFETY INSTRUCTIONS (CONT'D)

Safe Operation Is The Operator's Responsibility



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

W-2001-1285



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

I-2019-0284



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



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

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SAFETY INSTRUCTIONS (CONT'D)

Avoid Silica Dust



Cutting or drilling concrete containing sand or rock containing quartz may result in exposure to silica dust. Do not exceed Permissible Exposure Limits (PEL) to silica dust as determined by OSHA or other job site Rules and Regulations. Use a respirator, water spray or other means to control dust. Silica dust can cause lung disease and is known to the state of California to cause cancer.

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.

SI EXC-0208

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FIRE PREVENTION (CONT'D)

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 gasoline 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.

Starting

Do not use ether or starting fluids on any engine that has glow plugs. 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 Arrestor Exhaust System

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

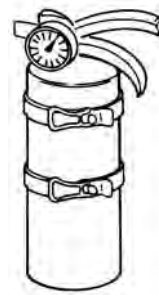
Welding And Grinding

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.

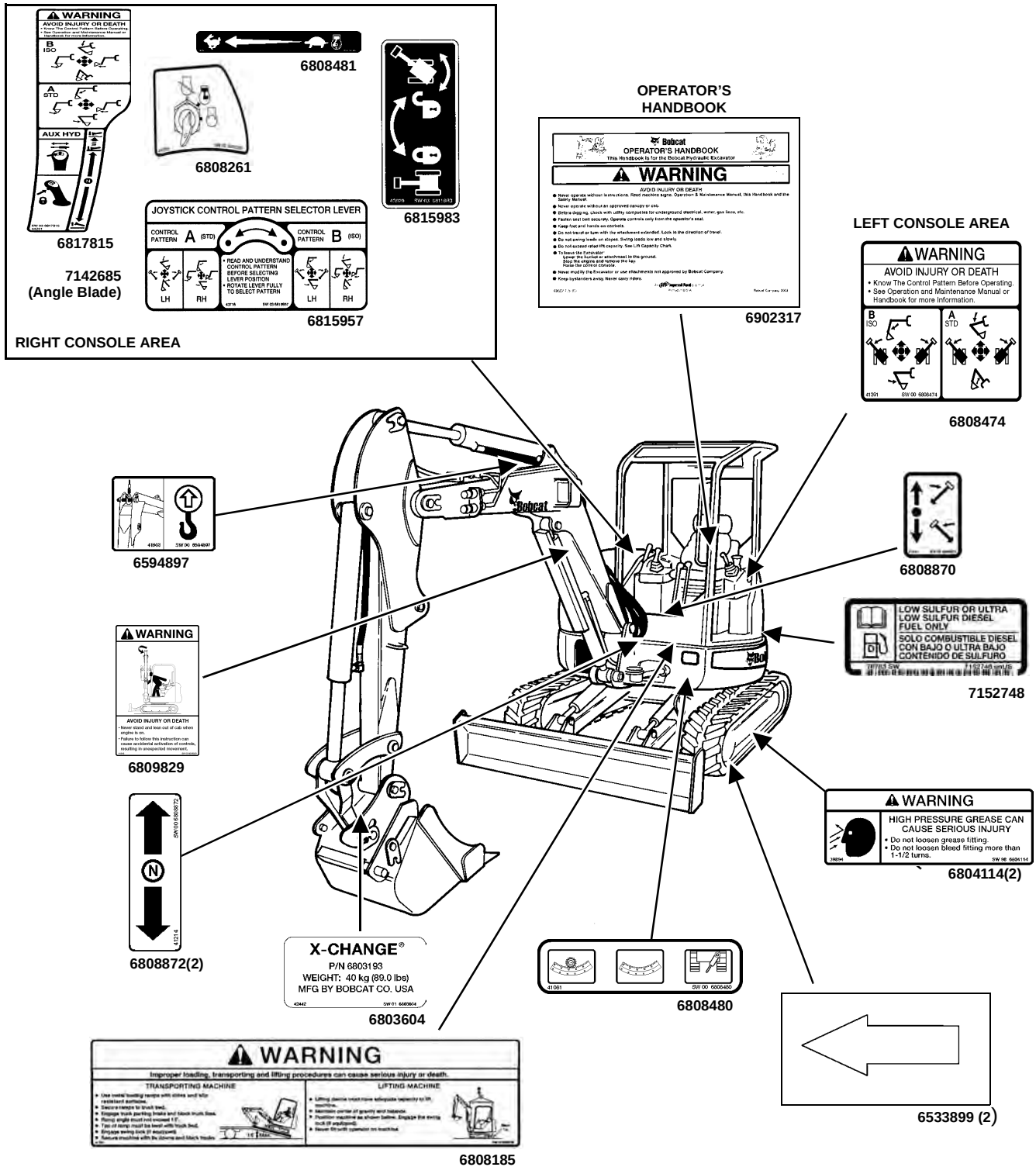
Fire Extinguishers



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.

MACHINE SIGNS (DECALS)

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.

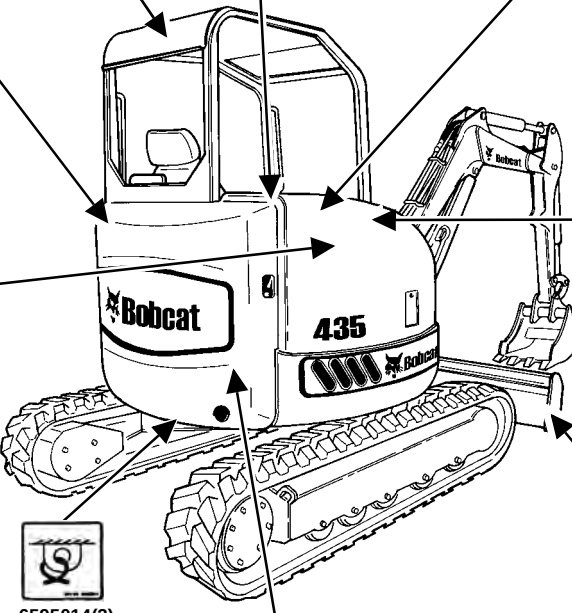


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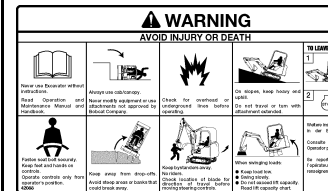
B-19745

MACHINE SIGNS (DECALS) (CONT'D)

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.



WARNING
AVOID INJURY OR DEATH



INSIDE CAB
6807776

WARNING
Hot surfaces can cause serious injury.
Do not touch.
Allow to cool before servicing.



6817225

BOBCAT HYDRAULIC FLUID



6565990

IN ENGINE COMPARTMENT



6809263(2)

WARNING
Hot pressurized fluid.
Can cause serious burns.

6804233

WARNING
AVOID INJURY OR DEATH

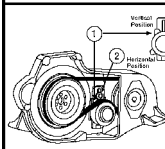


6708929 6815915

DO NOT Add Engine Glycol Coolant TO SA-11 (57 C) WITH BOBCAT PG COOLANT (Propylene Glycol)
Check Condition With Refractometer
Stop Operation and Maintenance. Refill as needed.

6808602

SPRING LOADED IDLER ADJUSTING PROCEDURE



6814726
FastTrack Only

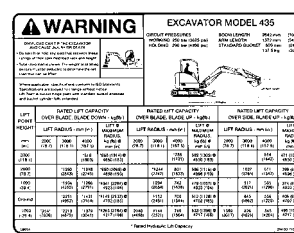
WARNING
KEEP FINGERS AND OBJECTS AWAY FROM FAN.



6576048

IN R.H. SIDE COVER

WARNING
EXCAVATOR MODEL 435



7107501 (With Standard Arm)
7107502 (With Long Arm)

WARNING
EMERGENCY EXIT



6815984

43820 SW 03 6815985

6815985

43820 SW 03 6815986

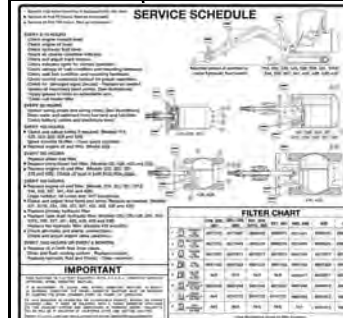
6815986

X-Change Decals:
7116757 - Hydraulic
7102651 - Pin On / Bolt On

6595014(3)

6815993(2)

SERVICE SCHEDULE



7158257

INSIDE REAR DOOR

(Cab Option)

EMERGENCY EXIT



6815984

43820 SW 03 6815985

6815985

43820 SW 03 6815986

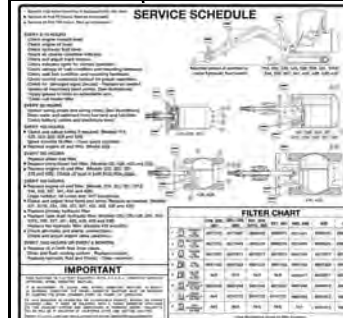
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X-Change Decals:
7116757 - Hydraulic
7102651 - Pin On / Bolt On

6595014(3)

6815993(2)

SERVICE SCHEDULE



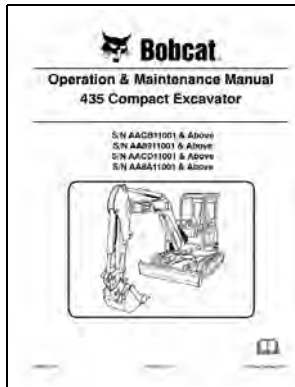
7158257

INSIDE REAR DOOR

PUBLICATIONS AND TRAINING RESOURCES

The following publications are also available for your Bobcat excavator. You can order them from your Bobcat dealer.

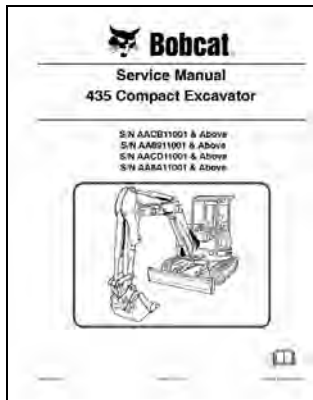
For the latest information on Bobcat product and the Bobcat Company, visit our web site at www.training.bobcat.com or www.bobcat.com;



OPERATION & MAINTENANCE MANUAL

6986748

- Complete instructions on the correct operation and the routine maintenance of the Bobcat Excavator.



SERVICE MANUAL

6986749

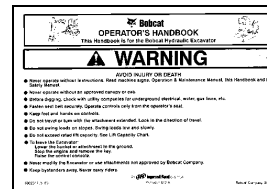
- Complete maintenance instructions for your Bobcat Excavator.



SAFETY MANUAL

6901951

Provide basic safety procedures and warnings for your Bobcat Excavator. Also available in Spanish 6901951AR



OPERATOR'S HANDBOOK

6902317

- Gives basic operation instructions and safety warnings.



COMPACT EXCAVATOR TRAINING COURSE

6903186

Introduces operator to step-by-step basics of Compact Excavator operation. Also available in Spanish P/N 6903228



EXCAVATOR SERVICE SAFETY TRAINING COURSE

6900916

Introduces Service Technicians to step-by-step basics of proper and safe excavator maintenance and servicing procedures



OPERATOR SAFETY VIDEO

6903181

- Provides basic safety instructions.



OPERATOR SAFETY DVD

6904762

Provides basic safety instructions contained in all Bobcat Safety Videos in both English and Spanish.

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Bobcat®

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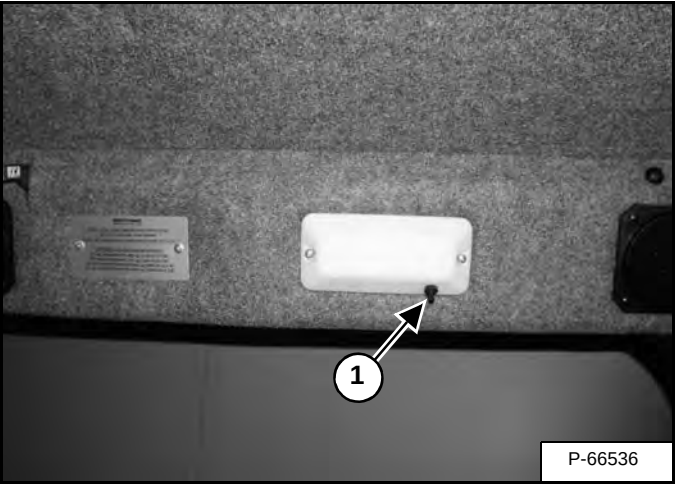
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Cab Interior Light (If Equipped)

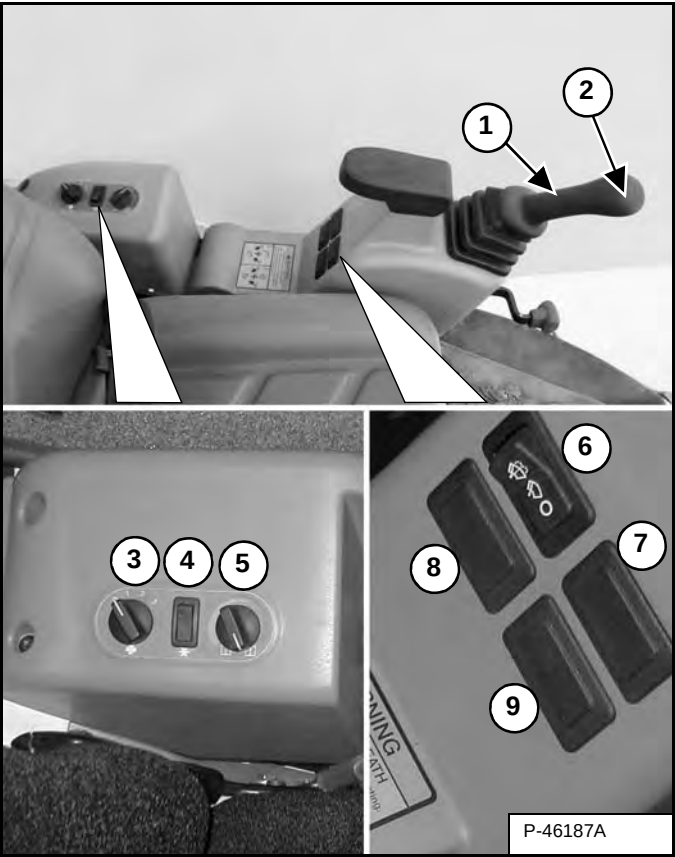
Figure OI-1



Press the button (Item 1) [Figure OI-1] to turn the light ON. Press again to turn OFF.

Left Console

Figure OI-2



Left Console [Figure OI-2]

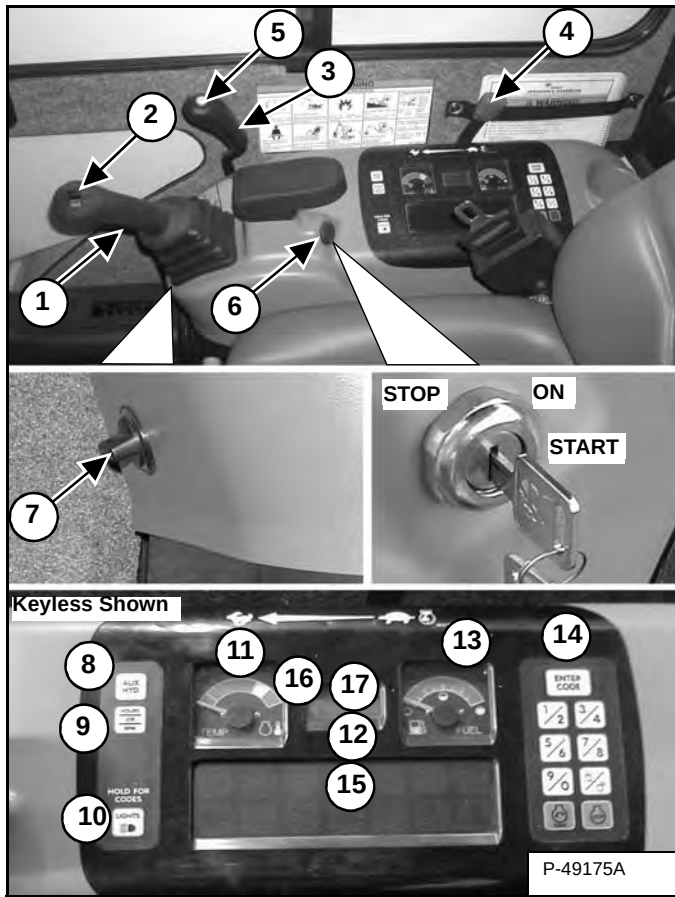
REF. NO	DESCRIPTION	FUNCTION/OPERATION
1	Left Joystick	(See HYDRAULIC CONTROLS on Page OI-19.)
2	Horn	Press button to sound horn.
3	Fan Motor Switch (If Equipped)	Turn clockwise to increase fan speed; counterclockwise to decrease.
4	Air Conditioning Switch (If Equipped)	Press top of switch to turn air conditioner ON (light in switch will be ON), Press bottom of switch to turn OFF.
5	Temperature Control (If Equipped)	Turn clockwise to increase temperature; counterclockwise to decrease.
6	Wiper/Washer Switch (If Equipped)	Press the switch to the left to turn wiper ON. Press and hold switch to the left to activate window washer window washer. Press the switch to the right to turn wiper OFF.
7	Hydraulic X-Change Switch (If Equipped)	Press and Hold the switch to the left to fully extent the hydraulic pins, Press and Hold the switch to the right to fully retract the hydraulic pins.
8	Secondary Auxiliary Switch (If Equipped)	Move the switch to the right and use the boom swing pedal to activate the secondary auxiliary hydraulics, Move the switch to the left for boom swing function.
9	Not Used	- - -

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INSTRUMENTS AND CONSOLES (CONT'D)

Right Console

Figure OI-3



Right Console [Figure OI-3]

REF. NO.	DESCRIPTION	FUNCTION/OPERATION
1	Right Joystick	(See HYDRAULIC CONTROLS on Page OI-19.)
2	Auxiliary Hydraulic Switch	Controls the fluid flow to the auxiliary quick couplers (attachment). (See Auxiliary Hydraulics on Page OI-22.)
3	Blade Control Lever	Blade Control: Controls raising and lowering the blade. Pushed all the way forward puts blade in float position. (See BLADE CONTROL LEVER on Page OI-23.) Angle Blade: Controls blade angle, left and right. (See BLADE CONTROL LEVER on Page OI-23.)
4	Speed Control Lever	Controls RPM of the engine

REF. NO.	DESCRIPTION	FUNCTION/OPERATION
5	Two-Speed Button / Angle Blade Button (If Equipped)	Two-Speed Activation: Engages and disengages High Range Travel Speed, (See Two-Speed Travel on Page OI-9.) Angle Blade Activation (If equipped:) Engages and disengages angle blade. (See Angle Blade (If Equipped) on Page OI-23.)
6	Key Switch (STANDARD Panel Only)	Always perform the <i>PRE-STARTING PROCEDURE</i> , (See PRE-STARTING PROCEDURE on Page OI-27.) Before starting the engine. (See STARTING THE ENGINE on Page OI-29.)
7	Auxiliary Power Outlet	12 volt receptacle for accessories.
8	Auxiliary Hydraulic Button	Activates and deactivates auxiliary hydraulic function. (See Auxiliary Hydraulics on Page OI-22.)
9	HOURS/JOB/RPM	Press to show HOURS, JOB CLOCK or Engine RPM in LCD (Liquid Crystal Display, Item 11.) (See Password Lockout Feature on Page SA-5.)
10	LIGHTS/HOLD FOR CODES	Press once to turn lights ON; press again to turn lights OFF, Press and hold two seconds for display of SERVICE CODES in LCD (Item 11).
11	TEMPerature	Shows the engine coolant temperature.
12	LCD (Liquid Crystal Display)	The LCD is the HOURMETER during normal operation of the excavator, When preheat is activated (Keyless Start), the LCD will show remaining preheat time. Can also be used to display JOB CLOCK or Engine RPM. (See Job Clock on Page SA-5.)
13	FUEL Gauge	Shows the amount of fuel in the tank.
14	Keyless (OPTIONAL)	(Always perform the <i>PRE-STARTING PROCEDURE</i> , (See PRE-STARTING PROCEDURE on Page OI-27.) Before starting the engine. (See STARTING THE ENGINE on Page OI-29.)
15	Function Icons	(See Function Icons on Page OI-7.)
16	Job	On when JOB CLOCK is activated.
17	RPM	On when Engine RPM is activated.

NOTE: Always turn key switch and all accessories to OFF position after the engine is stopped. The battery will discharge if the key is left ON. Alarm will sound if the key is in the ON position with the engine stopped.

INSTRUMENTS AND CONSOLES (CONT'D)

Function Icons

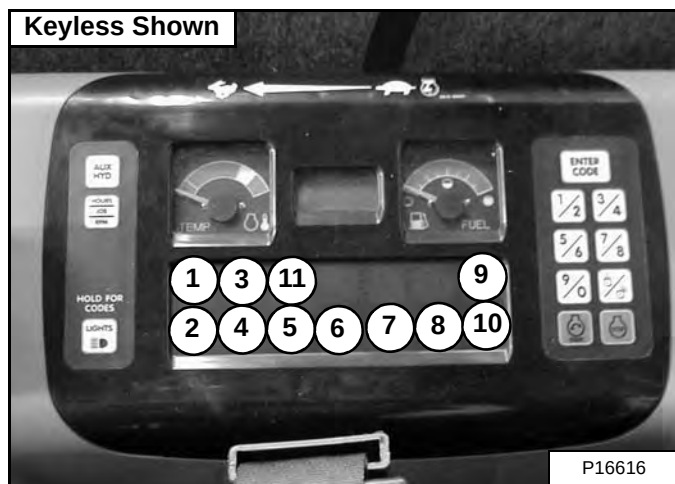
The table below shows the Icons, their function and other important information.

REF.	FUNCTION	ICON/LIGHT	ALARM	CONDITION/ CODE	DESCRIPTION
1	Auxiliary Hydraulics	OFF CONTINUOUS FLASHING	--- --- 3 Beeps	--- --- Error ♦	Auxiliary Hydraulics Button pressed, hydraulic functions available. Error with Auxiliary Hydraulics.
2	Two-Speed Travel	OFF CONTINUOUS FLASHING	--- --- 3 Beeps	--- --- Error ♦	Two-Speed activated, High Range engaged Solenoid Error
3	Hydraulic/ Traction Drive	CONTINUOUS OFF FLASHING FLASHING	--- --- 3 Beeps CONTINUOUS	* --- Error ♦ Error ♦	Left Console down. Hydraulic/Traction Drive functions activated Left Console up. Hydraulic/Traction Drive functions deactivated Error with console sensor or workgroup solenoid Workgroup solenoid not connected
4	Glow Plugs	OFF CONTINUOUS FLASHING	--- --- 3 Beeps	* --- Error ♦	Glow Plugs energized Error with Glow Plugs
5	System Voltage	OFF FLASHING	--- 3 Beeps 3 Beeps CONTINUOUS CONTINUOUS	* Error ♦ Warning ♦ Warning ♦ Shutdown ♦	Voltage out of range Voltage low or high Voltage extremely high Voltage extremely low - Engine will stop in 10 seconds.
6	Engine Oil Pressure	OFF CONTINUOUS CONTINUOUS FLASHING	--- 3 Beeps 3 Beeps CONTINUOUS	* Error ♦ Warning ♦ Shutdown ♦	Engine Oil Pressure sender out of range. Engine Oil level low. Engine Oil pressure very low, Engine will shutdown in 10 seconds.
7	Hydraulic Oil Filter & Temperature	OFF FLASHING CONTINUOUS CONTINUOUS FLASHING	--- 3 Beeps 3 Beeps 3 Beeps CONTINUOUS	* Warning ♦ Error ♦ Warning ♦ Shutdown ♦	Error with Hydraulic Filter Hydraulic Oil Temperature out of range Hydraulic Filter plugged or temperature high Hydraulic Oil Temp. extremely high - Engine will stop in 10 seconds.
8	General Warning	OFF CONTINUOUS CONTINUOUS FLASHING	--- 3 Beeps 3 Beeps CONTINUOUS	* Error ♦ Warning ♦ Shutdown ♦	Error with one or more engine, hydraulic, or fuel functions. Low fuel, engine speed high, coolant temperature high Coolant temperature or engine speed extremely high - Engine will stop in 10 seconds.
9	Keypad Unlocked	ON OFF	--- ---	--- ---	Panel is unlocked
10	Seat Belt	ON	---	---	Light stays on for 45 seconds to remind operator to fasten seat belt.
11	Low Fuel	OFF CONTINUOUS	--- 3 Beeps	--- Warning	Light stays on

* This is the normal operating condition.

♦ These functions are monitored and have SERVICE CODES associated with them, See SYSTEM SETUP & ANALYSIS Page SA-3 for descriptions of SERVICE CODES.

Figure OI-4



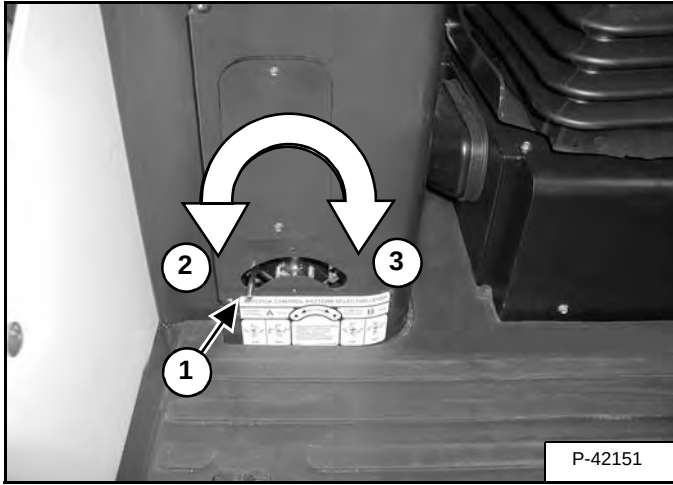
The right console contains the instrument panel with Function Icons [Figure OI-4].

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INSTRUMENTS AND CONTROLS (CONT'D)

STD/ISO Selector Valve

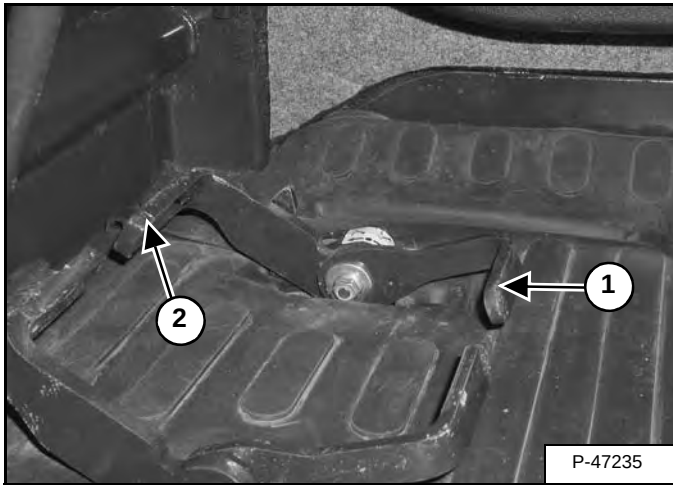
Figure OI-5



Move the lever (Item 1) to the right (Item 2) to select STANDARD Control Pattern. Move to the left (Item 3) to select ISO Control Pattern [Figure OI-5]. (See HYDRAULIC CONTROLS on Page OI-19.)

Upperstructure Slew Lock

Figure OI-6



Push down on the front (Item 1) [Figure OI-6] of the foot pedal to engage the upperstructure swing lock.

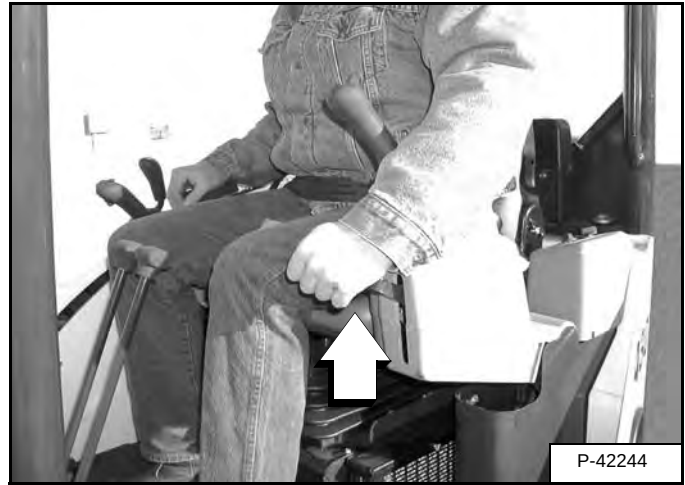
Push down on the rear (Item 2) [Figure OI-6] to disengage the upperstructure slew lock.

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

Raising And Lowering The Console

Raise the console before exiting the cab.

Figure OI-7



Pull up on the release handle [Figure OI-7]. The lift spring will assist in raising the console.

Lower the console before operating the excavator.

Push down on the console [Figure OI-7] until the latch is engaged.

NOTE: When the console is raised, the hydraulic and traction system functions are locked and will not operate.

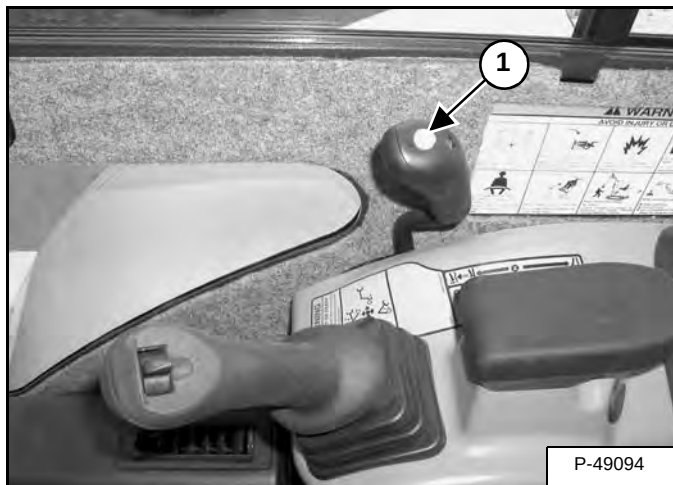
If the engine stops, the boom/bucket (attachments) can be lowered to the ground using hydraulic pressure in the accumulator.

The control console must be in the locked down position, and the key switch in the ON position.

INSTRUMENTS AND CONTROLS (CONT'D)

Two-Speed Travel

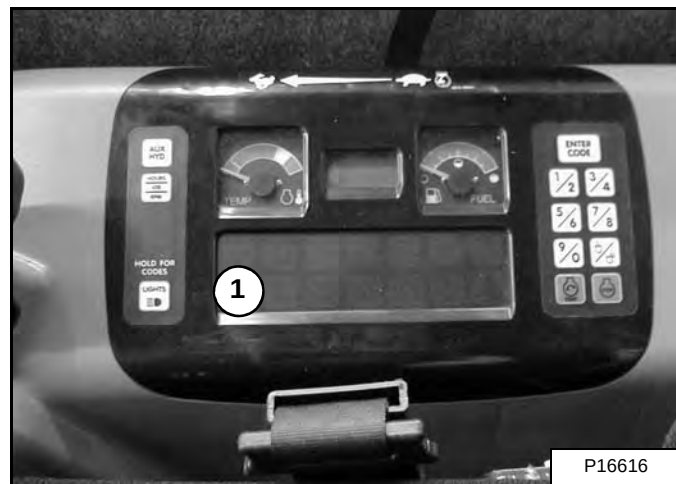
Figure OI-8



Press and release the button (Item 1) [Figure OI-8] to engage the High Range. Press a second time to disengage. If equipped with angle blade, one beep will sound. If not equipped with angle blade, there will be no beep. (See BLADE CONTROL LEVER on Page OI-23.)

NOTE: Activating angle blade (if equipped) will automatically disengage high range.

Figure OI-9



When High Range is engaged, the two speed travel icon (Item 1) [Figure OI-9] will illuminate.

Press the button again to disengage.

OPERATOR CANOPY (ROPS / TOPS)

Description

The Bobcat excavator has an operator canopy (ROPS / TOPS) 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 canopy, mounting, and hardware for damage. Never modify the ROPS / TOPS canopy. Replace the canopy and hardware if damaged. See your Bobcat dealer for parts.

ROPS / TOPS - Roll Over Protective Structure per ISO 3471, and Tip Over Protective Structure per ISO 12117.

**WARNING**

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)

Description

The Bobcat excavator has an optional operator cab (ROPS / TOPS) 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 cab, mounting, and hardware for damage. Never modify the ROPS / TOPS cab. Replace the cab and hardware if damaged. See your Bobcat dealer for parts.

ROPS / TOPS - Roll Over Protective Structure per ISO 3471, and Tip Over Protective Structure per ISO 12117.

**WARNING**

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.

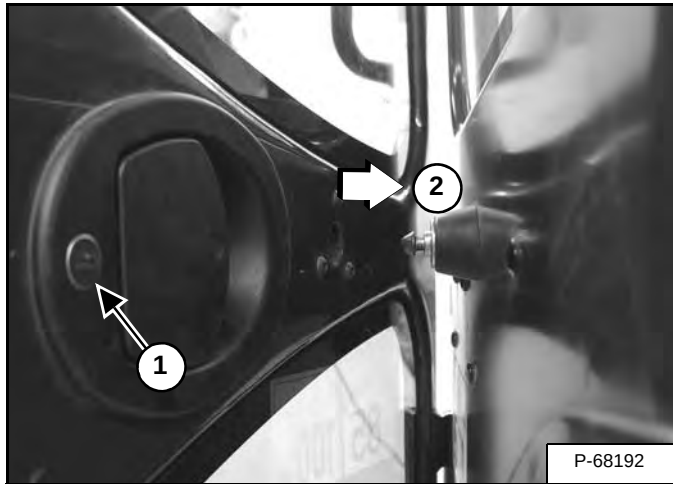
W-2069-0200

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

Cab Door

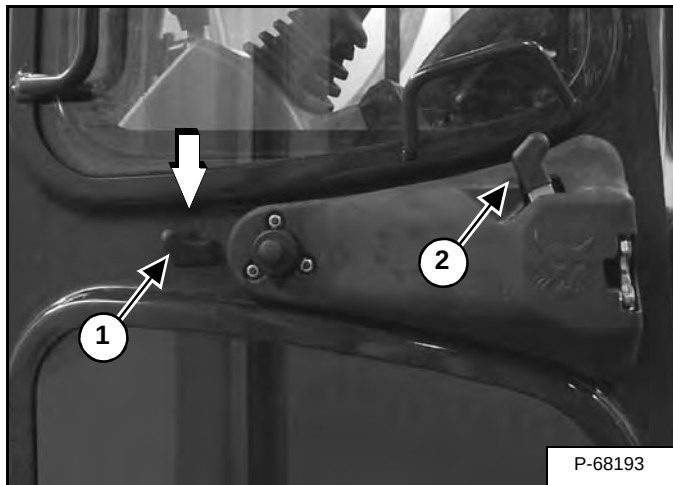
Figure OI-10



The cab door can be locked (Item 1) **[Figure OI-10]** with the same key as the starter switch.

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

Figure OI-11



When the door is in the open position, push down on the latch (Item 1) **[Figure OI-11]** and close the door.

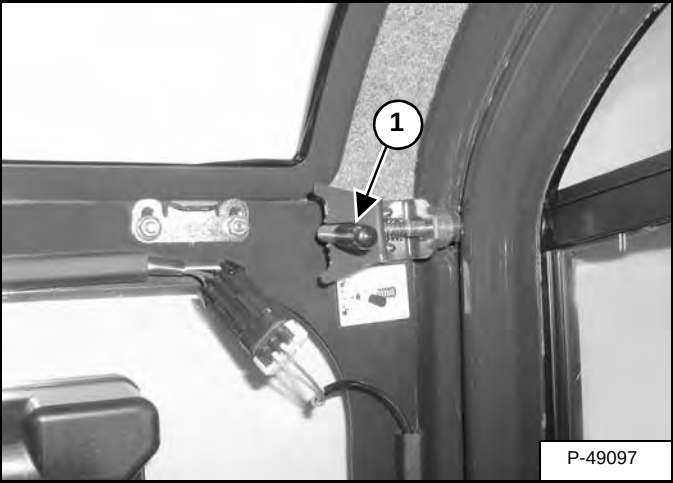
From inside the cab, open the door using handle (Item 2) **[Figure OI-11]**.

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

Front Window

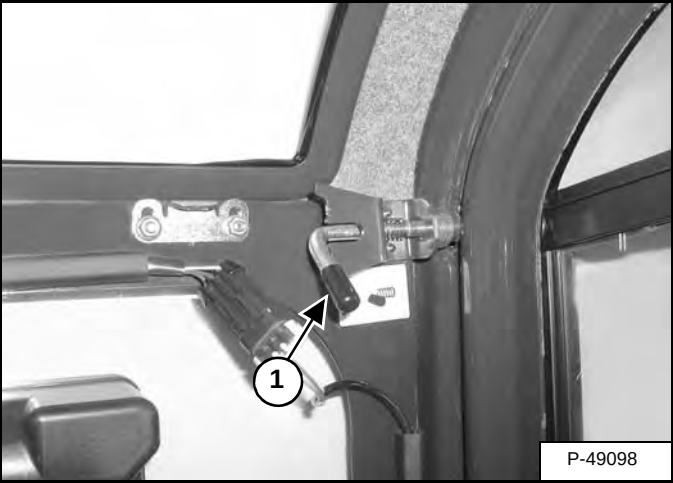
Opening The Front Window

Figure OI-12



Retract the two top window latch pins (Item 1) [Figure OI-12].

Figure OI-13



Turn the two top latches (Item 1) [Figure OI-13] to the unlocked position.

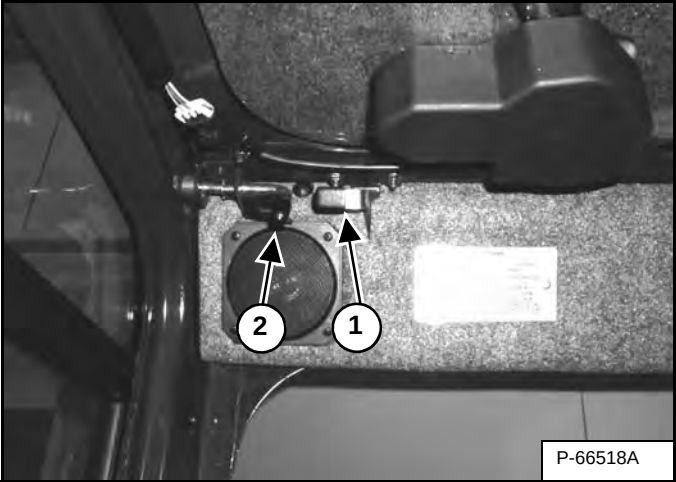
Figure OI-14



Use both window grab handles to pull the top of the window in [Figure OI-14].

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

Figure OI-15



When the window is fully raised, the latch (Item 1) will close on the bracket. Turn the two top latches (Item 2) [Figure OI-15] to the locked position.

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

Front Window (Cont'd)

Closing The Front Window

Support the window while releasing both window latch pins and placing the pins in the unlocked position [Figure OI-15 on Page OI-12].

Support the window using the left grab handle and pull down on the latch (Item 1) [Figure OI-14 on Page OI-12] to release the window.

Use both window grab handles to pull the window down [Figure OI-14 on Page OI-12].

Rotate the top latches (Item 1) [Figure OI-13 on Page OI-12] to the locked position (Item 1) [Figure OI-12 on Page OI-12].

Front Wiper

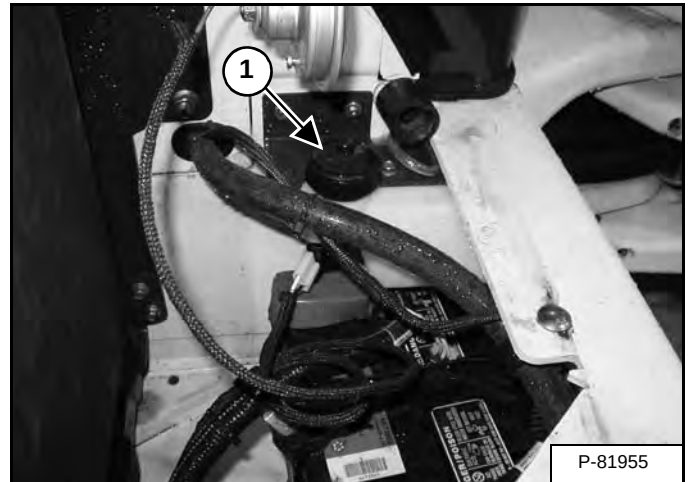
Figure OI-16



The front window is equipped with a wiper (Item 1) [Figure OI-16] and washer.

Window Washer Reservoir

Figure OI-17



The window washer reservoir (Item 1) [Figure OI-17] is located under the right side cover.

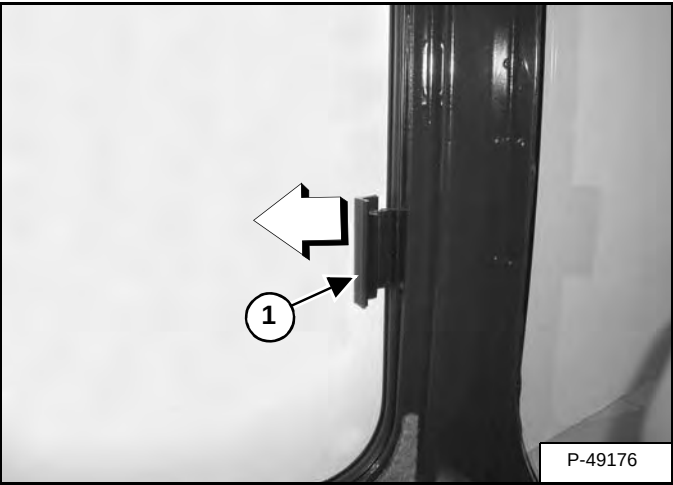
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OPERATOR CAB (ROPS / TOPS) (CONT'D)

Right Side Windows

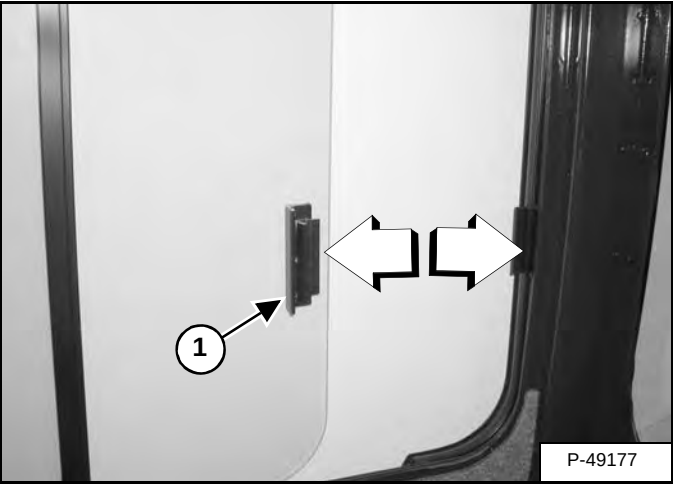
Opening the right rear window

Figure OI-18



Pull forward on the latch (Item 1) [Figure OI-18].

Figure OI-19

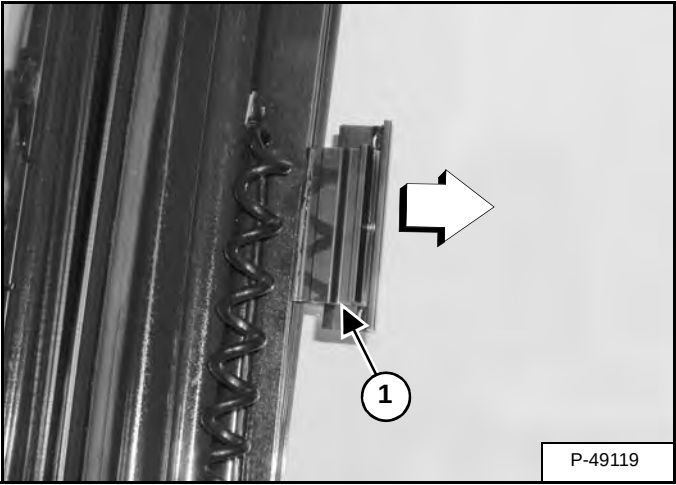


Pull the latch/handle (Item 1) [Figure OI-19] forward to open the window.

Push the handle back to close the window.

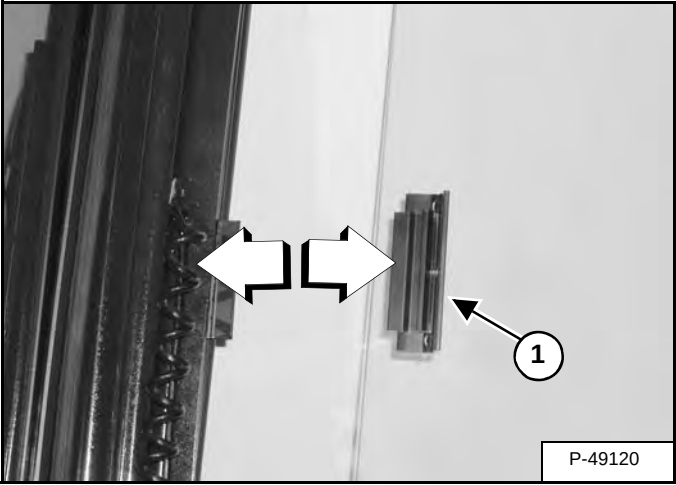
Opening the right front window

Figure OI-20



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

Figure OI-21



Pull the latch/handle (Item 1) [Figure OI-21] back to open the window.

Push the handle forward to close the window.

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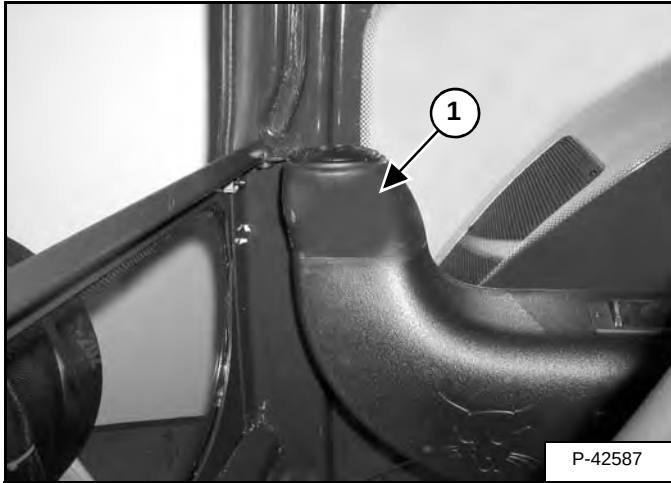
OPERATOR CAB (ROPS / TOPS) (CONT'D)

Heating, Ventilation, and Air Conditioning Duct

NOTE: The air conditioner duct can be ordered and used on heater models.

There are two HVAC ducts that the operator can choose to install.

Figure OI-22



The small duct (Item 1) [Figure OI-22] is standard for heater use.

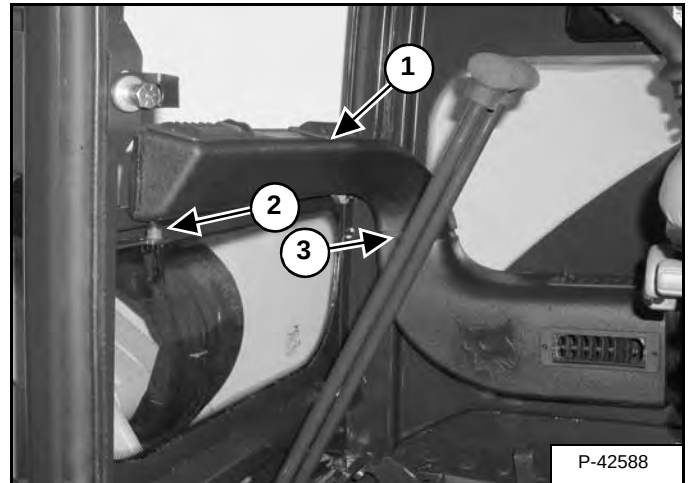
The large duct (Item 1) [Figure OI-22] is standard for models that have air conditioner available.

NOTE: This duct (Item 1) [Figure OI-22] can be removed for improved operator visibility.

Installation

Remove the screw and pull straight up to remove the duct (Item 1) [Figure OI-22].

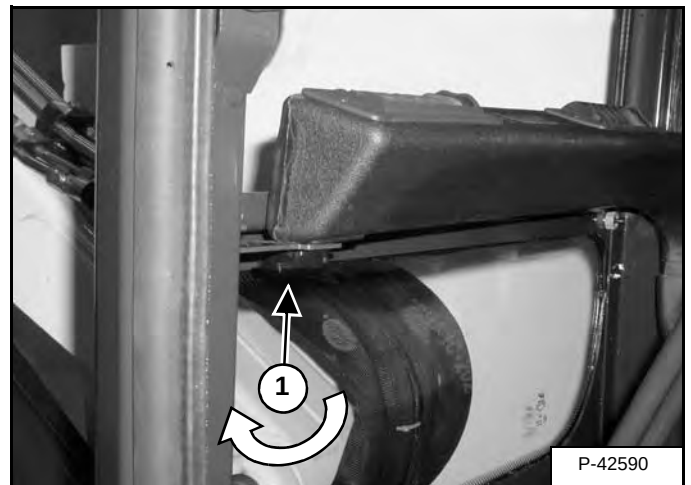
Figure OI-23



Place the air conditioning duct (Item 1) on the housing and over the locking stud (Item 2) [Figure OI-23].

Reinstall the screw (Item 3) [Figure OI-23].

Figure OI-24



Fully seat the duct and rotate the lock (Item 1) [Figure OI-24].

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TRAVEL CONTROLS

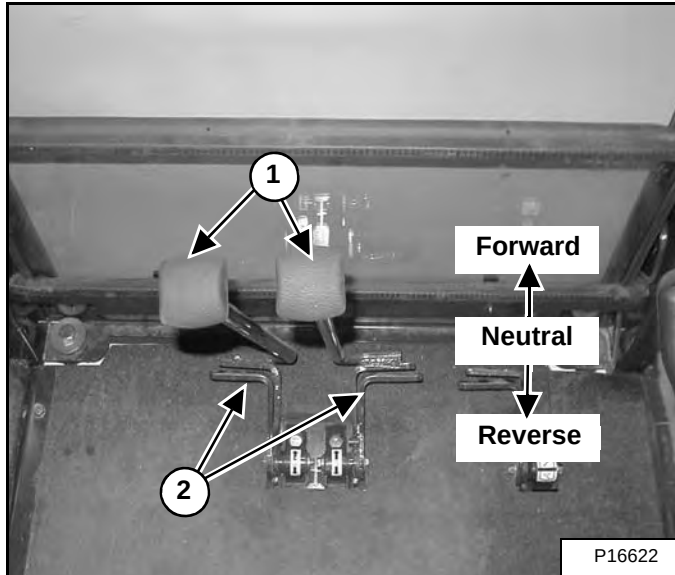
Description

The travel control levers control the movement of the excavator.

Forward And Reverse

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

Figure OI-25



Put the blade so that it is at the front of the machine (as you sit in the operator's seat). Slowly move both steering levers* (Item 1) [Figure OI-25] forward for forward travel; backward for reverse travel.

* Travel can also be controlled with foot pedals (Item 2) [Figure OI-25]. Pivot the heel of the pedals forward for additional space on the floor.

WARNING

AVOID INJURY OR DEATH

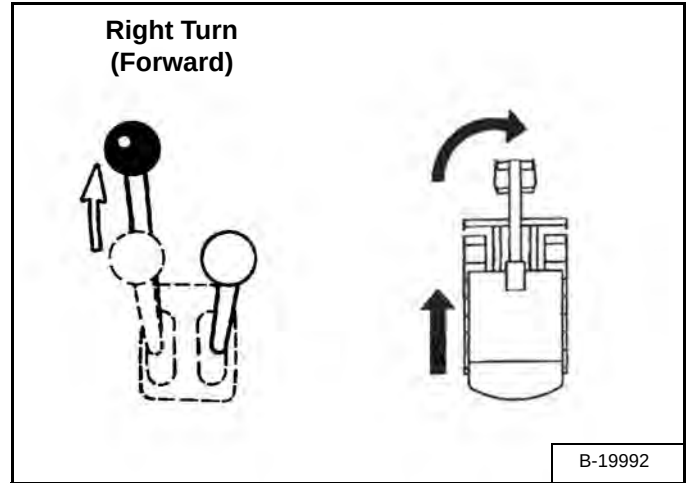
- Check the blade location before traveling. When the blade is to the rear, operate the steering levers/foot pedals in the opposite direction to when the blade is in the front.
- Move the steering levers/foot pedals slowly. Abrupt lever motion will cause the machine to jerk.

W-2235-0396

Turning

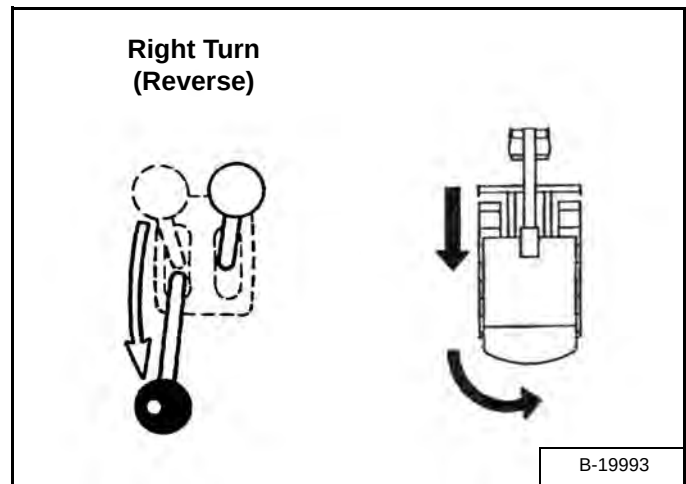
Right Turn

Figure OI-26



Push the left steering lever forward to turn right [Figure OI-26] while traveling forward.

Figure OI-27



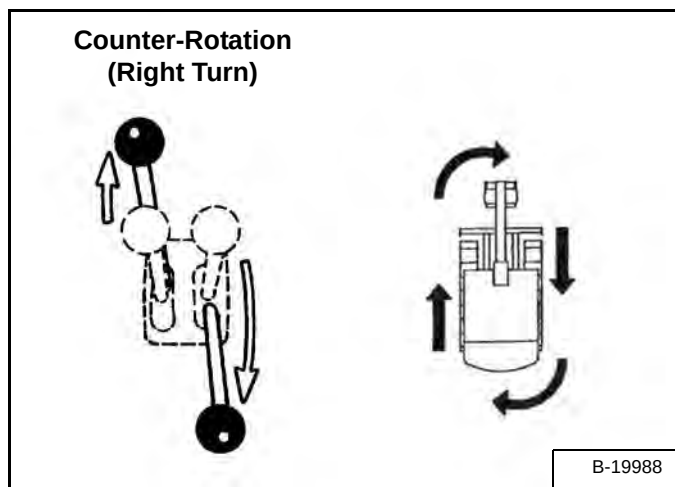
Pull the left steering lever backward to turn right while traveling backward [Figure OI-27]

STEERING LEVERS/FOOT PEDALS (CONT'D)

Turning (Cont'd)

Counter - Rotation Right Turn

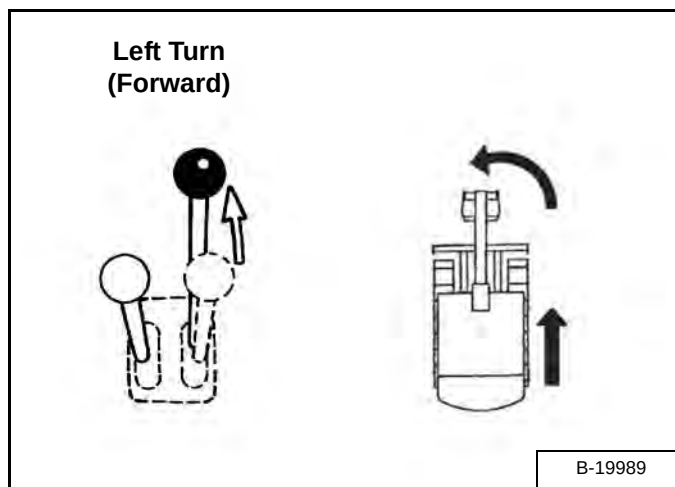
Figure OI-28



Push the left steering lever forward and pull the right steering lever backward [Figure OI-28].

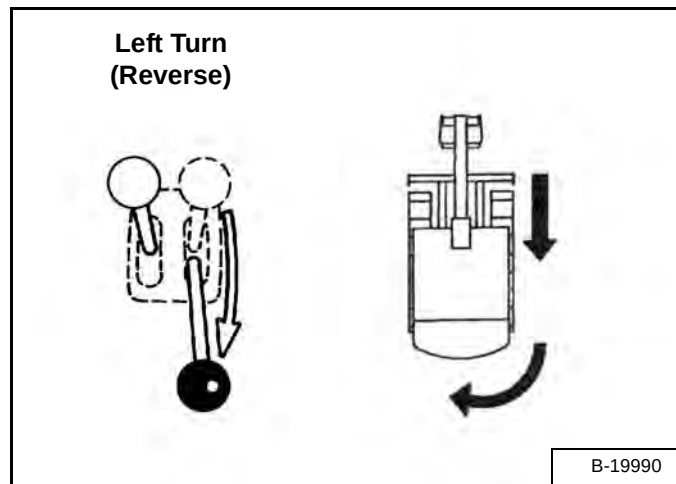
Left Turn

Figure OI-29



Push the right steering lever forward to turn left while traveling forward [Figure OI-29].

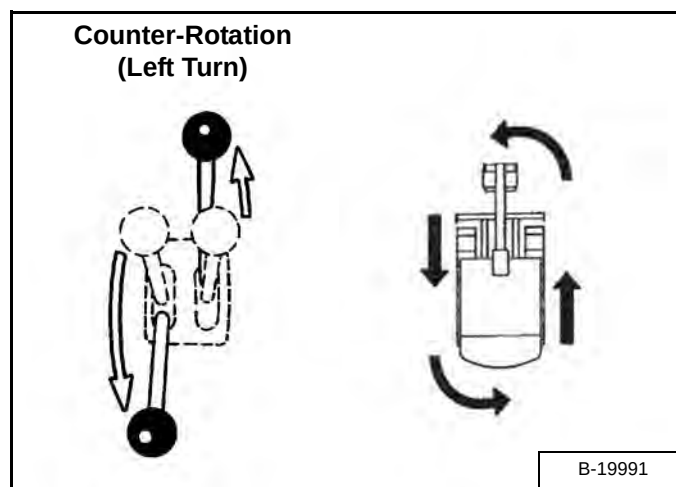
Figure OI-30



Pull the right steering lever backward to turn left while traveling backward [Figure OI-30].

Counter-Rotation Left Turn

Figure OI-31



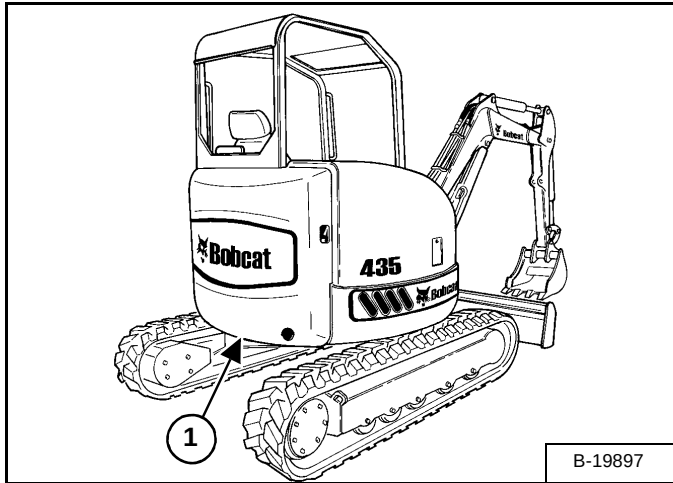
Push the right steering lever forward and pull the left steering lever backward [Figure OI-31].

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MOTION ALARM SYSTEM (IF EQUIPPED)

Operation

Figure OI-32



This excavator may be equipped with a motion alarm system. The motion alarm (Item 1) [Figure OI-32] is located inside the lower part of the engine compartment.



WARNING

**This machine is equipped with a motion alarm.
ALARM MUST SOUND!
when operating forward or backward.**

Failure to maintain a clear view in the direction of travel could result in serious injury or death.

The operator is responsible for the safe operation of this machine.

W-2786-0309

The motion alarm will sound when the operator moves the travel control levers in either the forward or reverse direction.

If alarm does not sound or for adjustment instructions, see inspection and maintenance instructions for the motion alarm system in the preventive maintenance section of this manual. (See MOTION ALARM SYSTEM (IF EQUIPPED) on Page PM-8.)

HYDRAULIC CONTROLS

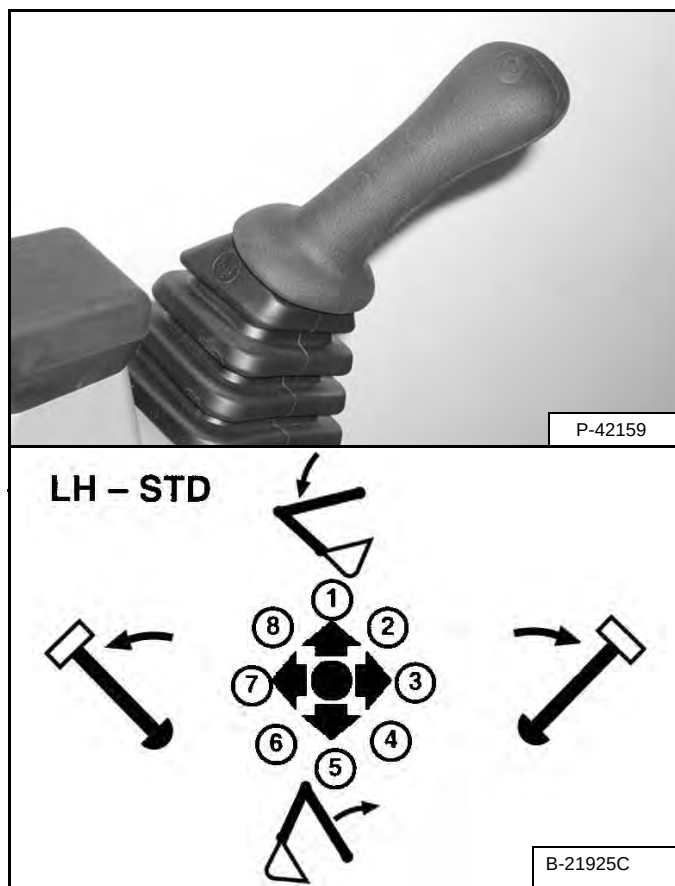
Description

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

Standard Control Pattern

Left Control Lever (Joystick)

Figure OI-33



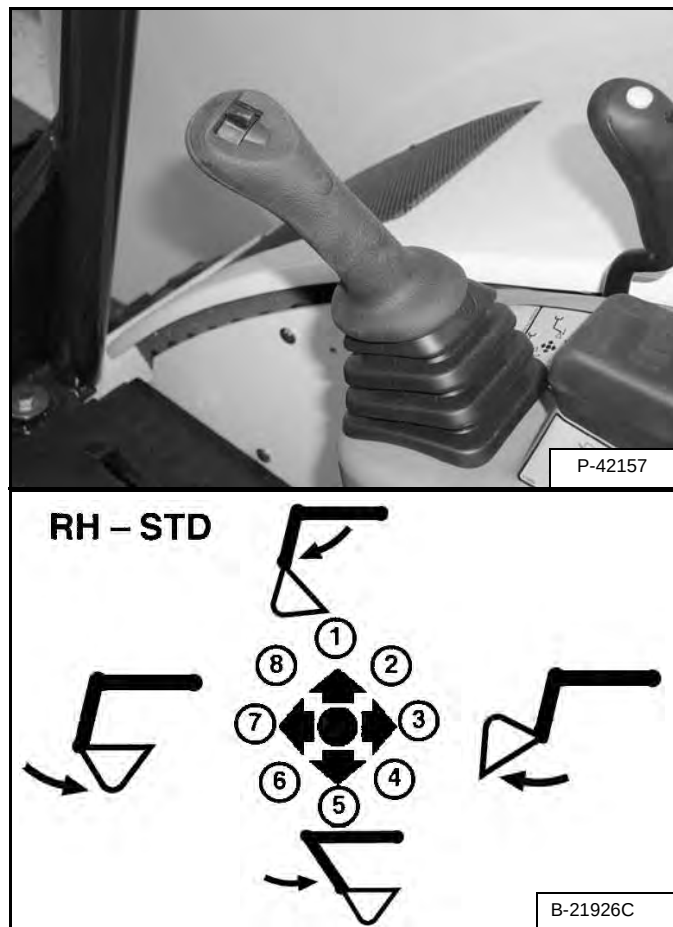
The work equipment (boom, arm, bucket, and upperstructure slew) is operated by using the right and left control levers (joysticks) [Figure OI-33] & [Figure OI-34].

The left lever is used to operate the boom and slew the upperstructure [Figure OI-35].

1. Boom lower.
2. Boom lower and slew right.
3. Slew right.
4. Boom raise and slew right.
5. Boom raise.
6. Boom raise and slew left.
7. Slew left.
8. Boom lower and slew left.

Right Control Lever (Joystick)

Figure OI-34



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

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.

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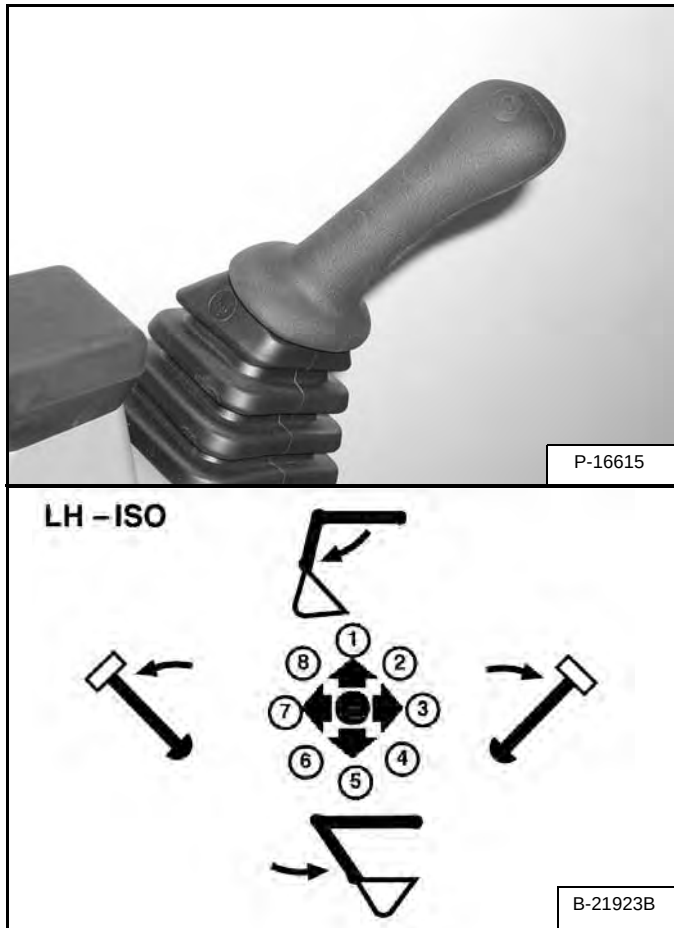
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HYDRAULIC CONTROLS (CONT'D)

ISO Control Pattern

Left Control Lever (Joystick)

Figure OI-35



The left lever is used to operate the arm and to slew the upperstructure [Figure OI-35].

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.

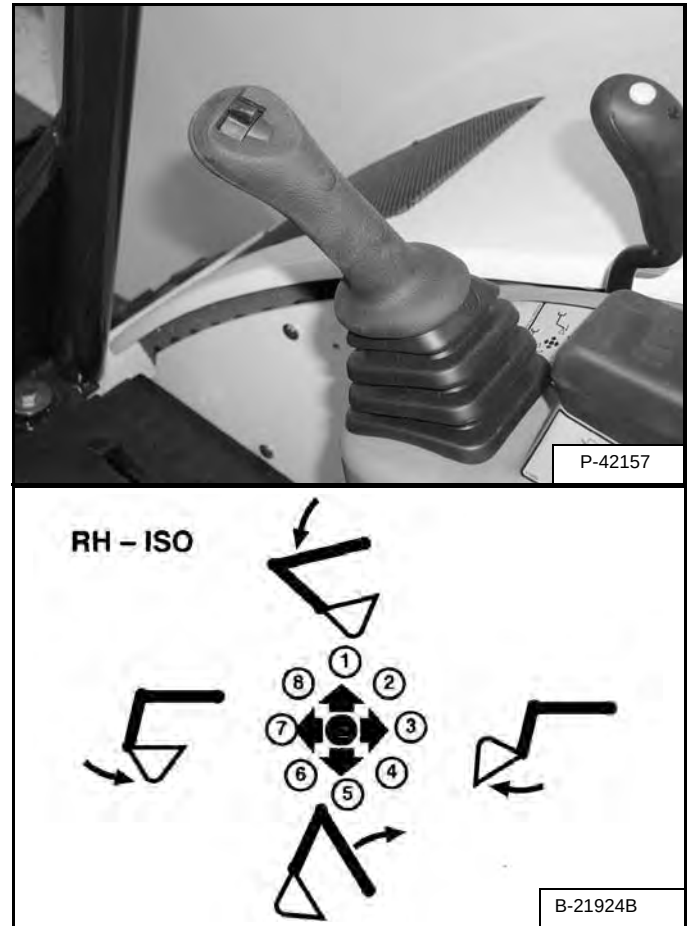
IMPORTANT

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

I-2051-0905

Right Control Lever (Joystick)

Figure OI-36



The right lever is used to operate the boom and bucket [Figure OI-36].

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.

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HYDRAULIC CONTROLS (CONT'D)

Quick Couplers

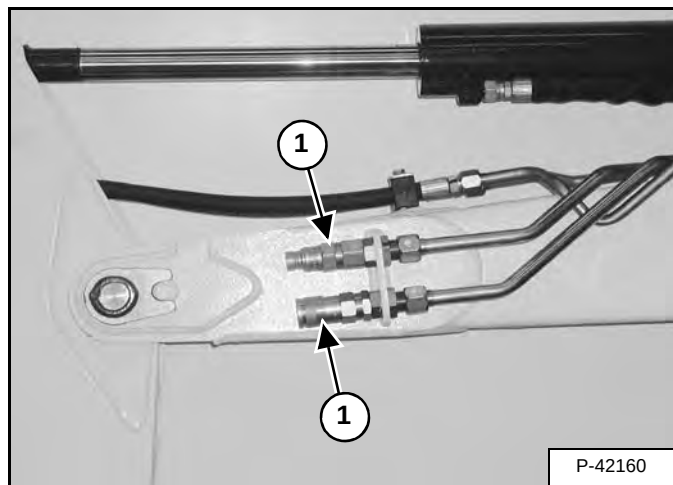
! WARNING

AVOID BURNS

Hydraulic fluid, tubes, fittings and quick couplers can get hot when running machine and attachments. Be careful when connecting and disconnecting quick couplers.

W-2220-0396

Figure OI-37



Excavators and attachments have flush faced couplers (Item 1) [Figure OI-37]

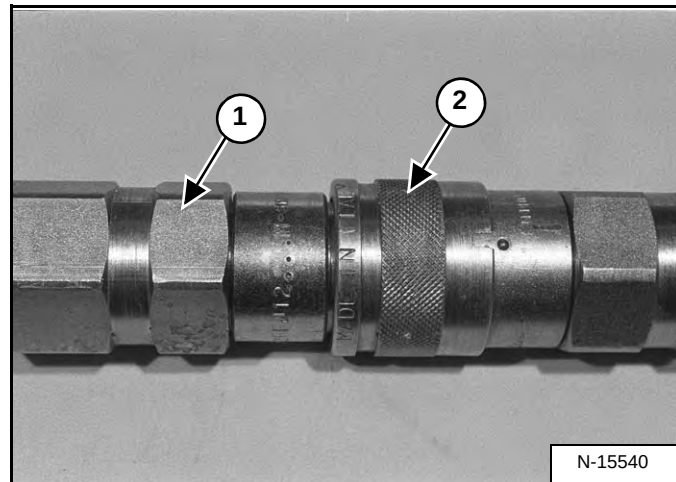
To Connect:

Remove any dirt or debris from the surface of both the male and female couplers, and from the outside diameter of the male coupler. Visually check the couplers for corroding, cracking, damage, or excessive wear, if any of these conditions exist, the coupler(s) (Item 1) [Figure OI-38] must be replaced.

Install the male coupler into the female coupler. Full connection is made when the ball release sleeve slides forward on the female coupler.

To Disconnect:

Figure OI-38



Hold the male coupler (Item 1). Retract the sleeve (Item 2) [Figure OI-38] on the female coupler until the couplers disconnect.

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HYDRAULIC CONTROLS (CONT'D)

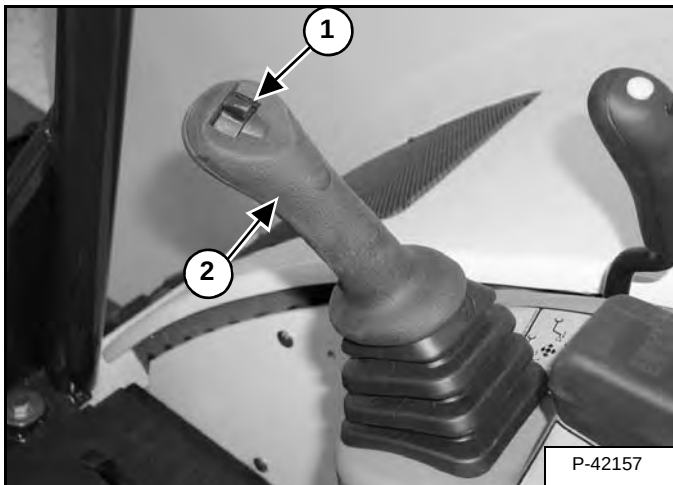
Auxiliary Hydraulics

Figure OI-39



Press the Auxiliary Hydraulics button on the right console (Item 1) [Figure OI-39].

Figure OI-40



Move the switch (Item 1) [Figure OI-40] on the right control lever to the right or left to direct fluid flow to an attachment such as a breaker or hydraulic clamp.

Press the switch (Item 2) [Figure OI-40] on the front of the handle to provide constant flow to the female coupler.

NOTE: Pressing the switch (Item 2) [Figure OI-40] to the left while pressing the switch on the front of the handle will provide constant flow to the male coupler.

Press the switch (Item 2) [Figure OI-40] a second time to stop auxiliary flow to the quick couplers.

NOTE: Constant flow to the couplers is not available when using the two-speed travel mode. You must disengage the two-speed travel mode before constant flow to the couplers can be engaged.

Relieving Hydraulic Pressure (Excavator And Attachment)

Excavator:

Put the attachment flat on the ground.

Stop the engine and turn the key to ON (Standard) or press ENTER CODE Button (Keyless).

Press AUX HYD Button (Item 1) [Figure OI-39] and then move the switch (Item 1) [Figure OI-40] to the right and left several times.

Attachments:

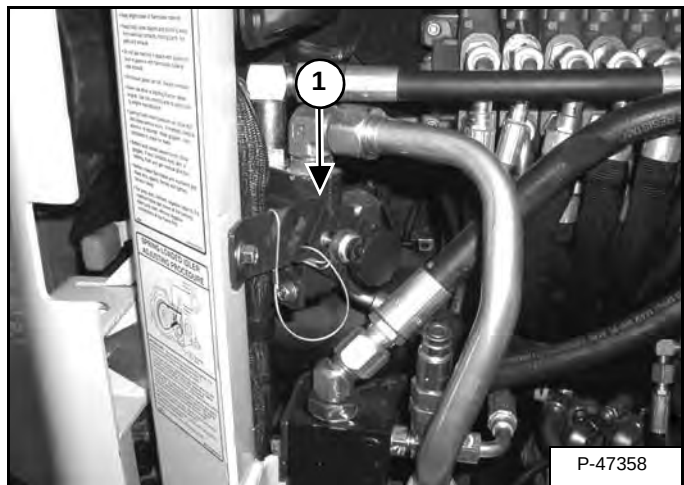
- Follow procedure above to release pressure in excavator.
- Connect male coupler from attachment to female coupler of excavator then repeat procedure above. This will release pressure in the attachment.
- Connect the female coupler from the attachment.

Hydraulic pressure in the auxiliary hydraulic system can make it difficult to engage quick couplers to an attachment.

Return To Tank Valve (If Equipped)

The return to tank valve is located under the right side cover.

Figure OI-41



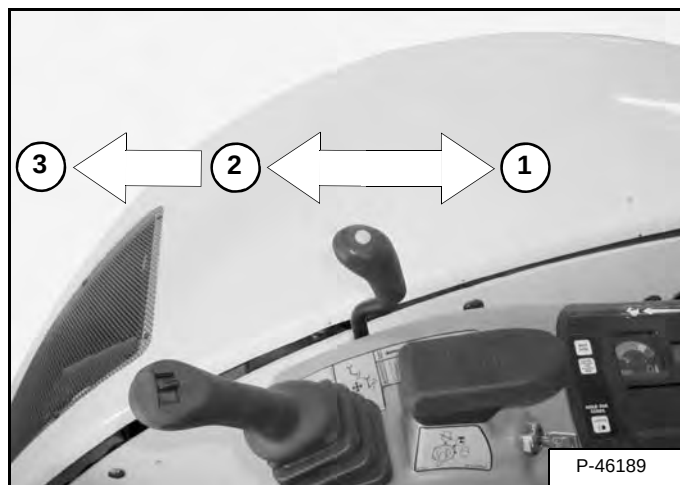
Remove the spool lock (Item 1) [Figure OI-41] and push the spool in to direct auxiliary return hydraulic fluid to the reservoir.

Pull the spool out, and install the spool lock (Item 1) [Figure OI-41] for two way hydraulic auxiliary flow operation.

BLADE CONTROL LEVER

Operation

Figure OI-42



Pull the lever backward to raise the blade (Item 1) [Figure OI-42]

Push the lever forward to lower the blade (Item 2) [Figure OI-42].

Push the lever (Item 3) [Figure OI-42] forward until the lever is in the locked position to put the blade in the *float* position.

Pull the lever backward to unlock from the *float* position.

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

Angle Blade (If Equipped)

Figure OI-43

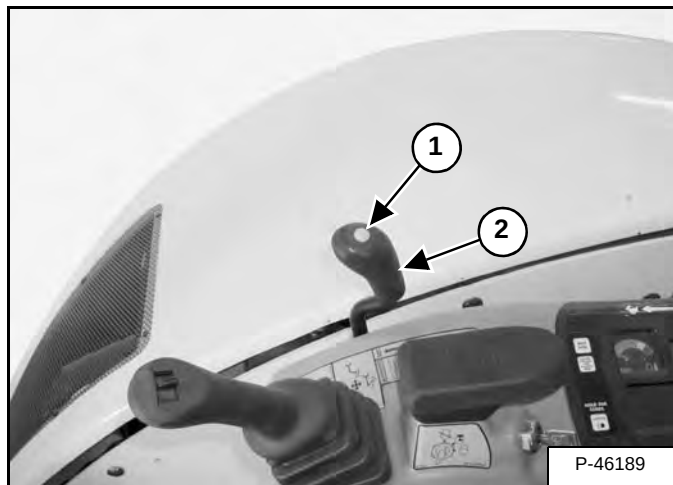
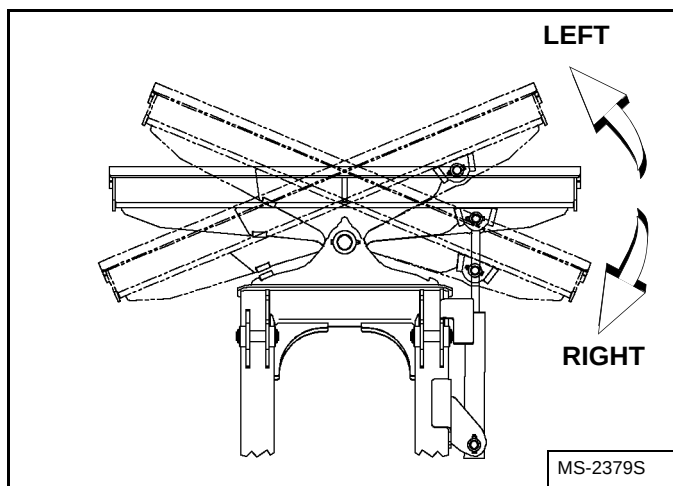


Figure OI-44



Press and hold the button (Item 1) [Figure OI-43] to activate the angle blade function (two beeps).

NOTE: Activating the angle blade will automatically disengage high range.

Push the lever (Item 2) [Figure OI-43] forward to angle the blade to the left [Figure OI-44].

Pull the lever (Item 2) [Figure OI-43] backward to angle the blade to the right [Figure OI-44].

Return the lever to neutral and release the button (Item 1) [Figure OI-43] to disengage angle blade.

NOTE: Releasing the button (Item 1) while using the angle blade function will revert the lever (Item 2) [Figure OI-43] back to blade raise / lower function.

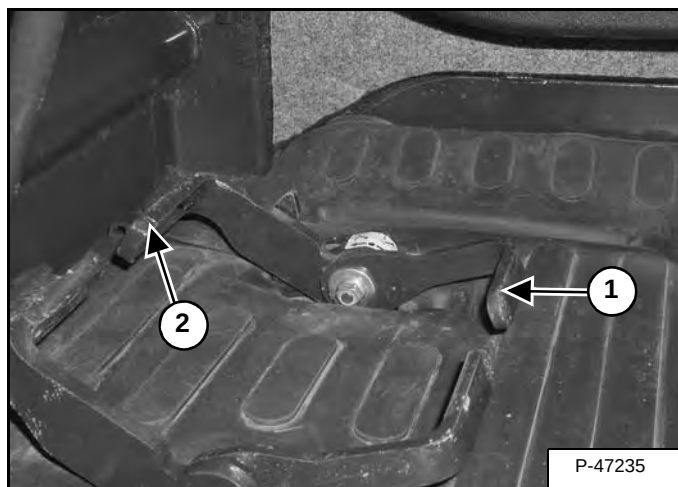
NOTE: Always have the blade straight for excavating or for lifting the excavator.

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BOOM SWING PEDAL

Operation

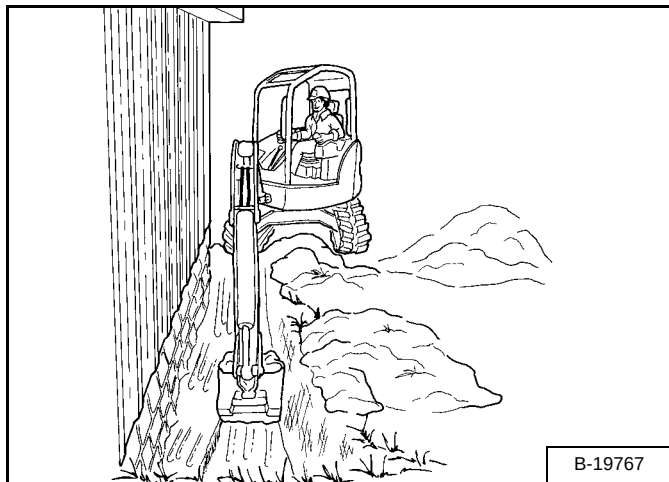
Figure OI-45



Release the pedal lock and pivot the heel of the pedal to the rear (Item 1) **[Figure OI-45]**.

Push the toe of the pedal (Item 2) to swing the boom to the right; push the heel (Item 1) **[Figure OI-45]** to swing the boom to the left.

Figure OI-46



NOTE: The purpose of the boom swing pedal is to offset the boom with respect to the upperstructure for digging close to a structure **[Figure OI-46]**.

Figure OI-47

• Service only when machine is equipped with this item.

■ Service at first 50 hours, then as scheduled.

▲ Service at first 100 hours, then as scheduled.

EVERY 8-10 HOURS

Check engine coolant level.

Check engine oil level.

Check hydraulic fluid level.

Check air cleaner condition indicator

Check and adjust track tension.

Check indicator lights for correct operation.

Check canopy or *cab condition and mounting hardware.

Check seat belt condition and mounting hardware.

Check control console(s) lockout for proper operation.

Check for damaged signs (decals) - Replace as needed.

Grease all machinery pivot points. (See illustrations)

*Apply grease to slide on extendable arm.

*Clean cab heater filter

EVERY 50 HOURS

Grease swing pinion and swing circle. (See illustrations)

Drain water and sediment from fuel tank and fuel filter.

Check battery, cables and electrolyte level.

EVERY 100 HOURS

■ Check and adjust belt(s) if required. (Models 323, 325, 328 and 329)

Spark Arrestor Muffler - Clean spark chamber.

EVERY 250 HOURS

Replace engine oil and filter. (Models 325, 328, 329 and 425)

■ Replace inline diesel fuel filter. (Models 425, 430 and 435)

■ Replace diesel fuel filter.

Check oil level in both final drive cases.

EVERY 500 HOURS

■ Replace engine oil and filter. (Models 323, 331, 331E, 334, 335, 337, 341, 430 and 435)

Clean radiator, oil cooler and *A/C condenser.

▲ Check and adjust drive belts and idlers. Replace as needed. (Models 331, 331E, 334, 335, 337, 341, 425, 430 and 435)

▲ Replace primary hydraulic filter and reservoir breather.

▲ Replace case drain hydraulic filter. (Models 325, 328, 329, 331, 334, 331E, 335, 337, 341, 425, 430 and 435)

▲ Replace fan hydraulic filter. (Models 430 and 435)

▲ Check alternator and starter connections.

Check and adjust engine valve clearance.

EVERY 1000 HOURS OR EVERY 12 MONTHS

▲ Replace oil in both final drive cases.

Replace hydraulic fluid and filter(s).

EVERY 2 YEARS

Drain and flush cooling system - Replace coolant.

SERVICE SCHEDULE

Machine shown in position to check hydraulic fluid levels.

323, 325, 328, 329, 331, 331E, 334, 335, 337, 341, 425, 430, 435

323

325, 328, 329, 331, 331E, 334, 335, 337, 341

425

430, 435

FILTER CHART

	323	325, 328, 329	331, 334, 331E, 335	337, 341	425	430	435
1. PRIMARY AIR FILTER	6673752	6672467	6666333	6666375	6672467	6666333	6666375
2. SECONDARY AIR FILTER	6673753	6672468	6666334	6666376	6672468	6666334	6666376
3. ENGINE OIL FILTER	6671057	6675517	6675517	6675517	6657635	6675517	6675517
4. FUEL FILTER	6667352	6667352	6667352	6667352	6667352	6667352	6667352
5. INLINE FUEL FILTER	N/A	N/A	N/A	N/A	6633977	6633977	6633977
6. PRIMARY HYDRAULIC FILTER	6653336	6661248	6661248	6670207	6661248	6668819	6668819
7. DRAIN HYDRAULIC FILTER	N/A	6516722	6516722	6516722	6661022	6681012	6681012
8. FAN HYDRAULIC FILTER	N/A	N/A	N/A	N/A	N/A	6681012	6681012

• See illustrations above for filter locations.

IMPORTANT

THIS MACHINE IS FACTORY EQUIPPED WITH A U.S.D.A. FORESTRY SERVICE APPROVED SPARK ARRESTOR MUFFLER.

IT IS NECESSARY TO CLEAN THIS SPARK ARRESTOR MUFFLER TO KEEP IT IN WORKING CONDITION. THE SPARK ARRESTOR MUFFLER MUST BE SERVICED BY DUMPING THE SPARK CHAMBER EVERY 100 HOURS OF OPERATION.

IF THIS MACHINE IS OPERATED ON FLAMMABLE FOREST, BRUSH OR GRASS COVERED LAND, IT MUST BE EQUIPPED WITH A SPARK ARRESTOR ATTACHED TO THE EXHAUST SYSTEM AND MAINTAINED IN WORKING ORDER. FAILURE TO DO SO WILL BE IN VIOLATION OF CALIFORNIA STATE LAW, SECTION 4442 PRC.

REFER TO LOCAL LAWS AND REGULATIONS FOR SPARK ARRESTOR REQUIREMENTS.

• See Operation & Maintenance Manual for more information and instructions.

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OI-25

435 Operation & Maintenance Manual

DAILY INSPECTION (CONT'D)

Daily Inspection And Maintenance

Maintenance work must be done at regular intervals. Failure to do so will result in excessive wear and early failures. The Service Schedule **[Figure OI-47 on Page OI-25]** is a guide for correct maintenance of the Bobcat Excavator. It is located inside the rear door of the excavator and also in this manual.

Check the following items before each day of operation:

- Operator Canopy or Cab (ROPS / TOPS) and mounting hardware.
- Seat belt and mounting hardware. Replace seat belt if damaged.
- Check for damaged decals, replace as needed.
- Check control console lockout.
- Check X-Change System (if equipped) for damage or loose parts.
- Air cleaner and intake hoses / clamps.
- Engine oil level and engine for leaks.
- Engine coolant level and engine for leaks.
- Check engine area for flammable materials.
- Check hydraulic fluid level and system for leaks.
- Check indicator lights for correct operation.
- Grease all pivot points.
- Check cylinder and attachment pivot points.
- Check the track tension.
- Repair broken and loose parts.
- Clean cab heater filter (if equipped).
- Check front horn and motion alarm (if equipped) for proper function.



WARNING

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

W-2001-0502

Fluids such as engine oil, hydraulic fluid, coolants, etc. must be disposed of in an environmentally safe manner. Some regulations require that certain spills and leaks on the ground must be cleaned in a specific manner. See local, state, and federal regulations for correct disposal.

IMPORTANT

PRESSURE WASHING DECALS

- **Never direct the stream at a low angle toward the decal that could damage the decal causing it to peel from the surface.**
- **Direct the stream at a 90 degree angle and at least 12 inches (300 mm) from the decal. Wash from the center of the decal toward the edges.**

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PRE-STARTING PROCEDURE

Operation & Maintenance Manual And Operator's Handbook Locations

Figure OI-48

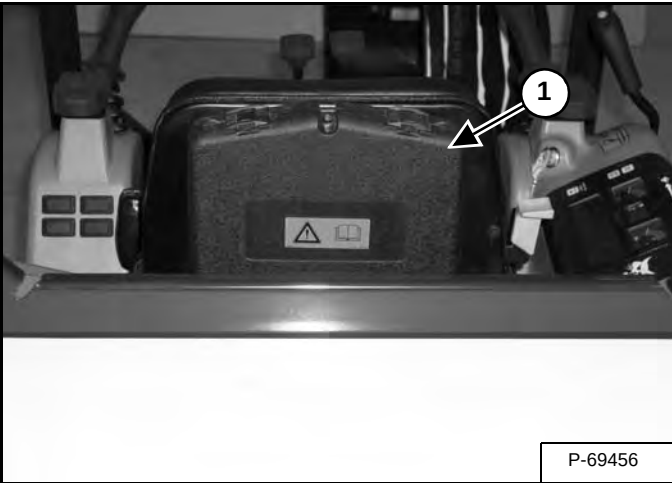


Figure OI-49

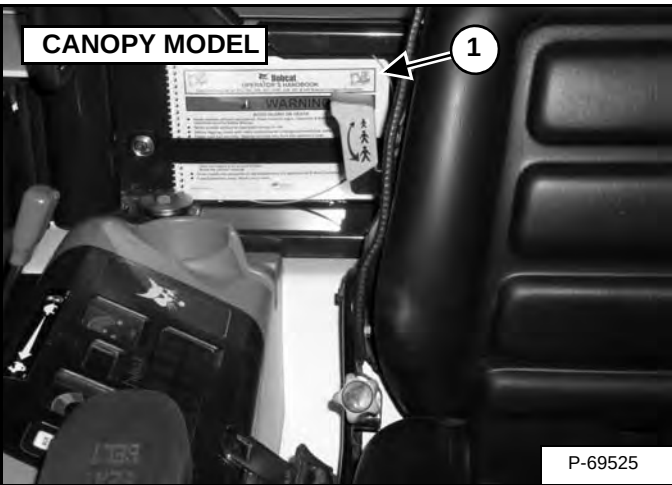


Figure OI-50



Read and understand the Operation & Maintenance Manual (Item 1) [Figure OI-48] (located inside the storage box on the back of the operator's seat) and the Operator's Handbook (Item 1) [Figure OI-49] or [Figure OI-50] before operating.

Entering The Excavator

Figure OI-51



Use the grab handles, tracks and safety treads to enter the canopy/cab [Figure OI-51].

! 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.

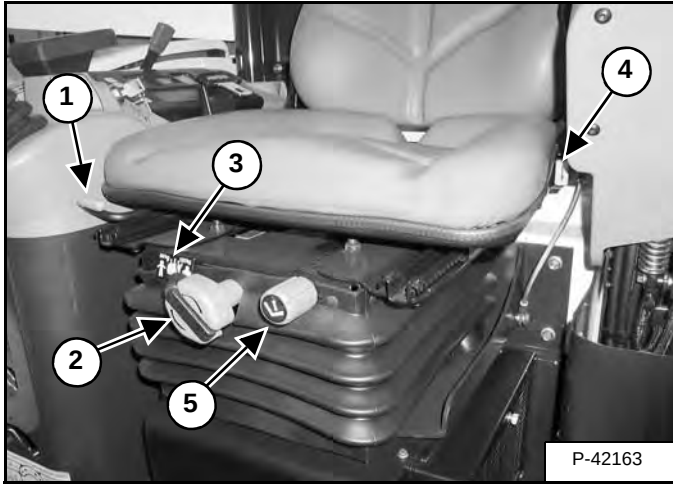
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PRE-STARTING PROCEDURE (CONT'D)

Seat Adjustment

Figure OI-52



Release the seat lever (Item 1) [Figure OI-52] to adjust the seat forward or backward.

Turn the handle (Item 2) to change the adjustment for operator weight. Turn the handle until the operator's weight is shown in the window (Item 3) [Figure OI-52].

Release the lever (Item 4) [Figure OI-52] to change the incline of the seat back.

Sit in the seat and turn the knob (Item 5) [Figure OI-52] to adjust the height of the seat.

Seat Belt Adjustment

Figure OI-53



Fasten the seat belt [Figure OI-53].

Control Console

Figure OI-54



Lower the control console [Figure OI-54].

NOTE: There is a control lock switch in the left console which deactivates the hydraulic control levers (joysticks) and the traction drive system when the control console is raised. The console must be in the locked down position for the hydraulic control levers (joysticks) and traction system to operate.

NOTE: If the control lock switch does not deactivate the control levers and traction system when console is raised, see your Bobcat dealer for service.

STARTING THE ENGINE

Key Switch

! WARNING

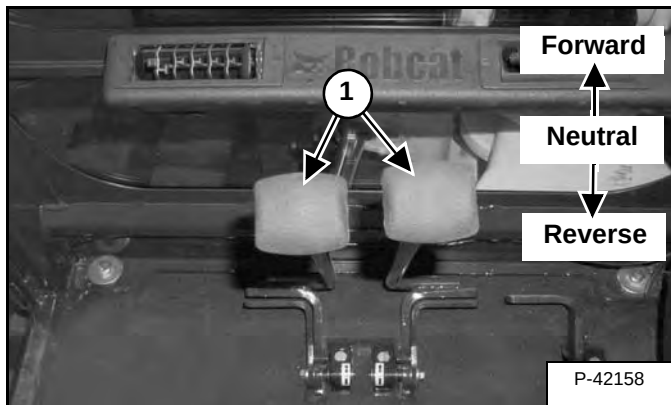
AVOID INJURY OR DEATH

- Fasten seat belt, start and operate only from the operator's seat.
- Never wear loose clothing when working near machine.

W-2135-1108

Perform the PRE-STARTING PROCEDURE. (See PRE-STARTING PROCEDURE on Page OI-27.)

Figure OI-55



Put control levers (Item 1) [Figure OI-55] in the neutral position.

Figure OI-56



Move the engine speed control (Item 1) [Figure OI-56] to low idle.

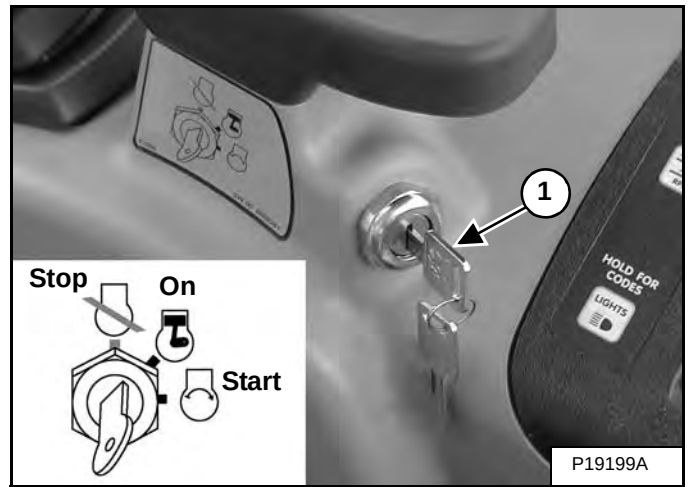
! WARNING

AVOID INJURY OR DEATH

When an engine is running in an enclosed area, fresh air must be added to avoid concentration of exhaust fumes. If the engine is stationary, vent the exhaust outside. Exhaust fumes contain odorless, invisible gases which can kill without warning.

W-2050-0807

Figure OI-57



Turn the key (Item 1) [Figure OI-57] to the ON position. If preheating is required, the glowplugs will automatically cycle and the remaining preheat time (in seconds) will show in the LCD. (Preheat icon will be ON).

Turn the key to START and release the key when the engine starts. It will return to the ON position [Figure OI-57].

Stop the engine if the warning lights and alarm do not go OFF. Check for the cause before starting the engine again.

Turn the key switch OFF to stop the engine.

IMPORTANT

Do not engage the starter for longer than 15 seconds at a time. Longer use can damage the starter by overheating. Allow starter to cool for one minute before using starter again.

I-2034-0700

! WARNING

AVOID INJURY OR DEATH

- Engines can have hot parts and hot exhaust gas. Keep flammable material away.
- Do not use machines in atmosphere containing explosive gas.

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STARTING THE ENGINE (CONT'D)

Keyless



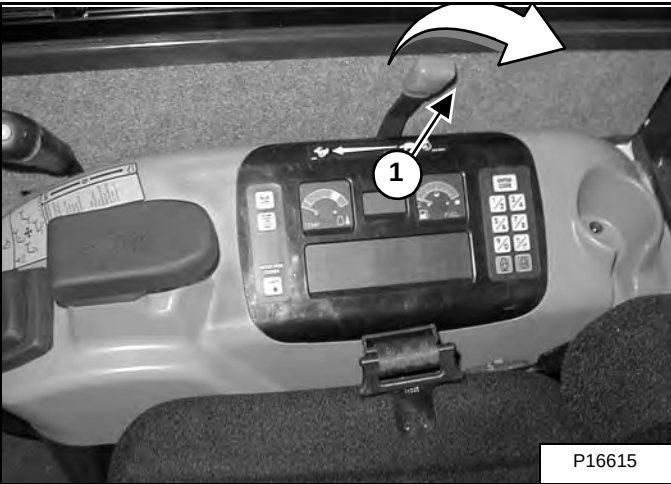
AVOID INJURY OR DEATH

- Fasten seat belt, start and operate only from the operator's seat.
- Never wear loose clothing when working near machine.

W-2135-1108

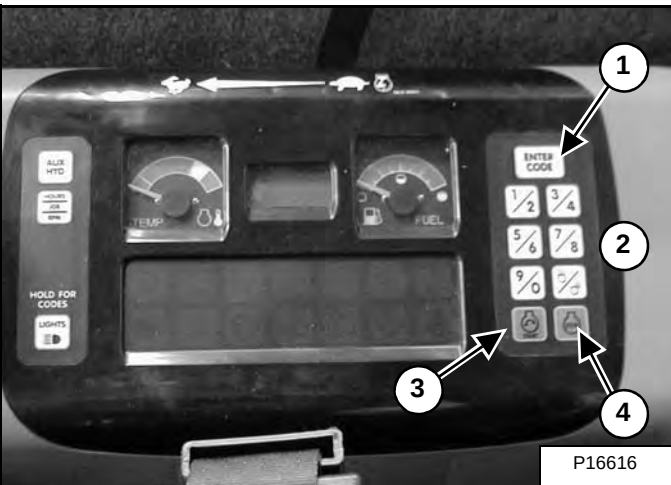
Perform the PRE-STARTING PROCEDURE (See PRE-STARTING PROCEDURE on Page OI-27.)

Figure OI-58



Move the engine speed control (Item 1) [Figure OI-58] to low idle.

Figure OI-59



Press ENTER CODE Button (Item 1) [Figure OI-59]. The display will become lighted and there will be two short beeps, CodE will appear on the LCD.

Use the keypad (Item 2) [Figure OI-59] to enter the password. For each digit that you enter, a dash will appear on the LCD. (You have 40 seconds to enter the password or the process will abort and you will need to start over.) If the password was entered correctly, there will be one long beep.

NOTE: If the password was incorrect there will be three short beeps and “Error” will appear on the LCD. Press the ENTER CODE Button again and start over. After three failed attempts, you must wait three minutes to try again.

Press the START Button (Item 3) [Figure OI-59] and hold it until the engine starts.



Do not engage the starter for longer than 15 seconds at a time. Longer use can damage the starter by overheating. Allow starter to cool for one minute before using starter again.

I-2034-0700

Press the STOP button (Item 4) [Figure OI-59] to stop the engine.

Stop the engine if the warning lights and alarm do not go OFF.

Check for the cause before starting the engine again.

Password Lockout Feature

See Password Lockout Feature. (See Passwords on Page SA-4.)

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STARTING THE ENGINE (CONT'D)

Cold Temperature Starting

! WARNING

AVOID INJURY OR DEATH

Do not use ether with glow plug (preheat) systems. Explosion can result which can cause injury, death, or severe engine damage.

W-2071-0907

If the temperature is below freezing, perform the following to make starting the engine easier:

- Replace the engine oil with the correct type and viscosity for the anticipated starting temperature. (See ENGINE LUBRICATION SYSTEM on Page PM-17.)
- Make sure the battery is fully charged:
- Install an engine heater, available from your Bobcat dealer.

NOTE: If the battery is discharged (but not frozen) a booster battery can be used to jump start the excavator. (See Using A Booster Battery (Jump Starting) on Page PM-24.)

Figure OI-60



Push the speed control lever (Item 1) [Figure OI-60] fully forward.

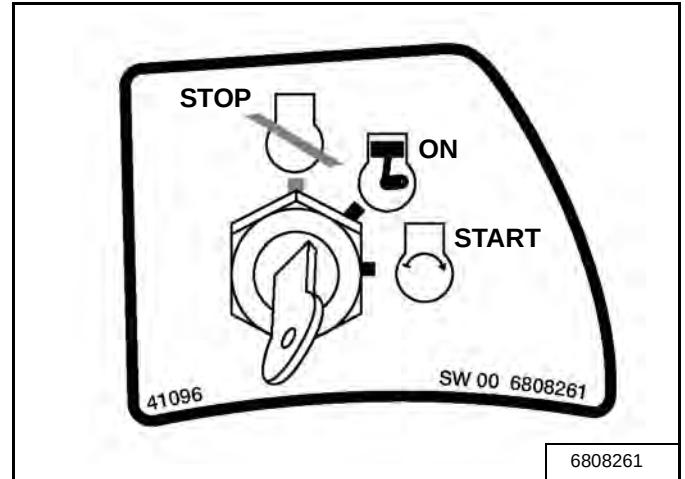
IMPORTANT

Do not engage the starter for longer than 15 seconds at a time. Longer use can damage the starter by overheating. Allow starter to cool for one minute before using starter again.

I-2034-0700

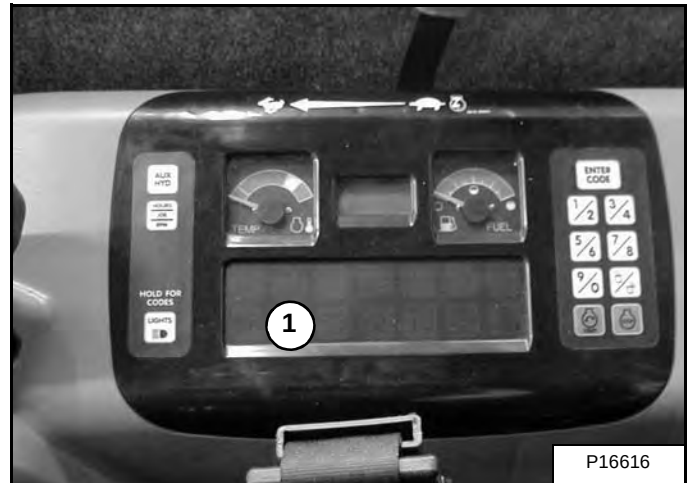
Key Switch

Figure OI-61



Turn the key to the ON position [Figure OI-61].

Figure OI-62



The preheat icon (Item 1) [Figure OI-62] will come ON. The glow plugs will automatically cycle. When the icon goes off, turn the key to start.

Release the key when the engine starts, it will return to the ON position.

Stop the engine if the warning lights and alarm do not go off. Check for the cause before starting the engine again.

When the engine speed increases, move the speed control lever to idle position until the engine warms.

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STARTING THE ENGINE (CONT'D)

Cold Temperature Starting (Cont'd)

Keyless

Follow STARTING PROCEDURE (See Keyless on Page OI-30.)

If the preheat icon comes ON, wait for it to go off before pressing the START Button [Figure OI-62 on Page OI-31].

The remaining preheat time (in seconds) will count down in the LCD.

IMPORTANT

Do not engage the starter for longer than 15 seconds at a time. Longer use can damage the starter by overheating. Allow starter to cool for one minute before using starter again.

I-2034-0700

IMPORTANT

Machines warmed up with moderate engine speed and light load have longer life.

I-2015-0284

! WARNING

AVOID INJURY OR DEATH

Do not use ether with glow plug (preheat) systems. Explosion can result which can cause injury, death, or severe engine damage.

W-2071-0907

Warming The Hydraulic System

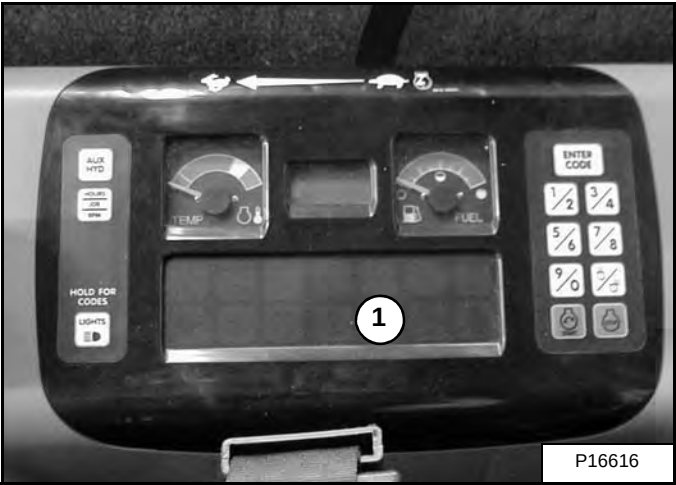
IMPORTANT

When the temperature is below -20°F (-30°C), hydrostatic oil must be warmed before starting. The hydrostatic system will not get enough oil at low temperatures and will be damaged. Park the machine in an area where the temperature will be above 0°F (-18°C) if possible.

I-2007-1285

Let the engine run at least 5 minutes to warm the engine and hydraulic fluid before operating the excavator.

Figure OI-63



If the Fluid Pressure Icon (Item 1) [Figure OI-63] comes ON when operating the excavator (cold), more warm up time is needed.

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STOPPING THE ENGINE AND LEAVING THE EXCAVATOR

Procedure

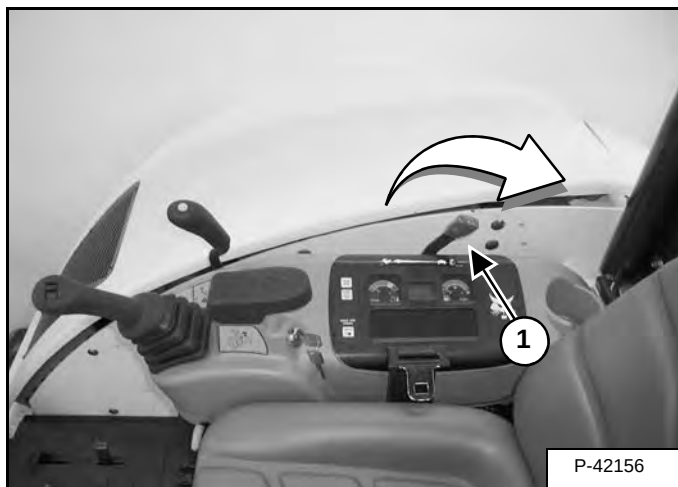
Figure OI-64



P-69903

Stop the machine on level ground. Lower the work equipment and the blade to the ground [Figure OI-64].

Figure OI-65

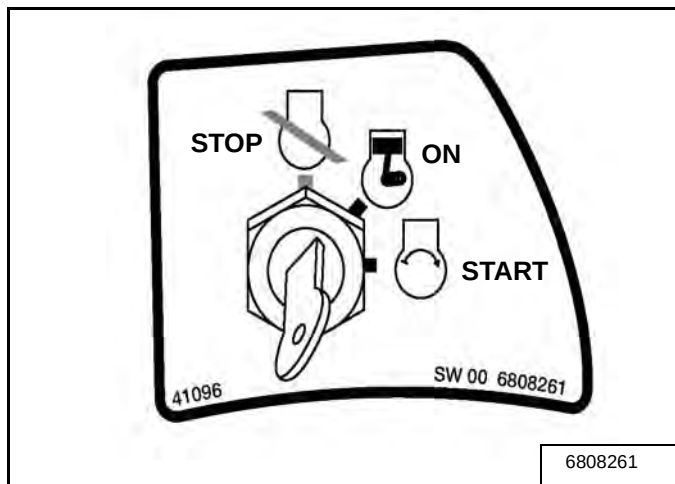


P-42156

Move the engine speed control (Item 1) [Figure OI-65] to low idle.

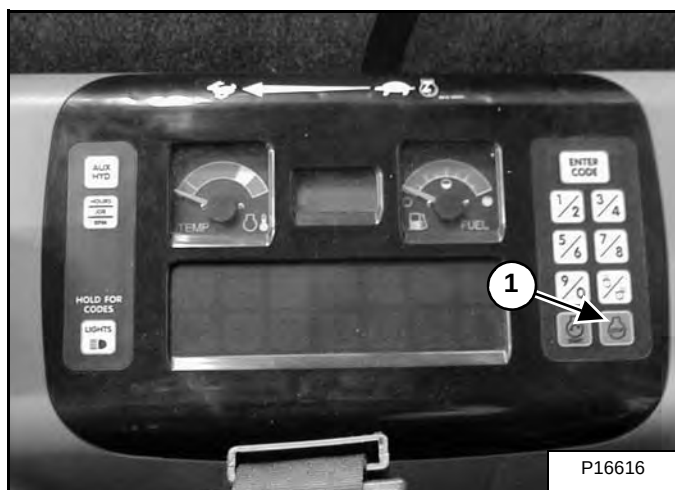
Let the engine run at idle speed for 5 minutes before stopping the engine.

Figure OI-66



6808261

Figure OI-67



P16616

Turn the key switch to STOP [Figure OI-66] or press the STOP Button (Item 1) [Figure OI-67].

Disconnect the seat belt. Remove the key from the switch to prevent operation of machine by unauthorized personnel. Raise the control console and exit the machine.

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STOPPING THE ENGINE AND LEAVING THE EXCAVATOR (CONT'D)

Emergency Exits

The right side rear window and the front window provide exits.

Right Side Rear Window

Figure OI-68



Exit through the window **[Figure OI-68]**.

Front Window

Figure OI-69



Raise the front window and exit through the window **[Figure OI-69]**.

NOTE: If the excavator has a Special Applications Kit installed, the front window is **NOT** an emergency exit.

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ATTACHMENTS

Installing And Removing The Attachment (Hydraulic X-Change)

Installation

NOTE: Installation and removal of the bucket is shown. The procedure is the same for other attachments. Disconnect any hydraulic lines that are operated by hydraulic power before removing any attachments (breaker, auger, etc.).

! WARNING

AVOID INJURY OR DEATH

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

W-2052-0907

! WARNING

Both hydraulic pins must be fully extended through the attachment mounting holes and locked with both retainer pins and clips. Failure to fully engage and lock hydraulic pins can allow attachment to come off and cause serious injury or death.

W-2507-0706

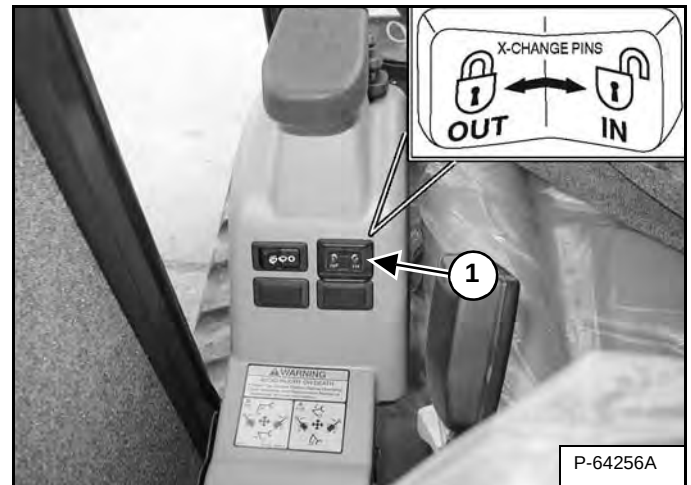
Figure OI-70



Start the engine.

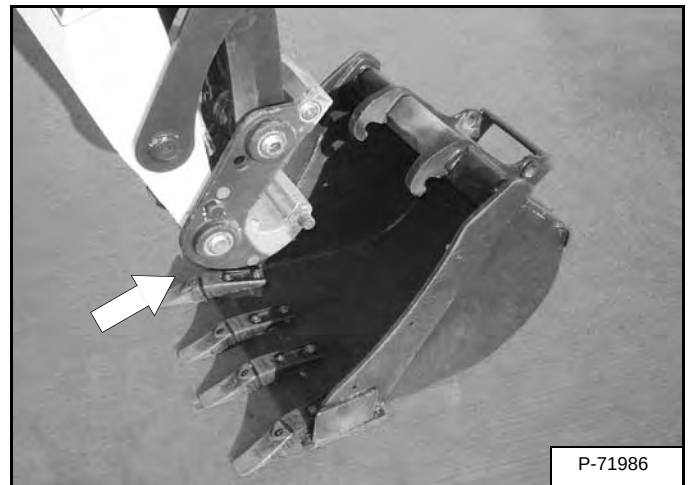
Swing the excavator arm fully to the left [Figure OI-70] (for better operator visibility when connecting attachments).

Figure OI-71



Press and hold the X-Change switch (Item 1) [Figure OI-71] to the right to fully retract the hydraulic pins.

Figure OI-72



Move the arm toward the attachment [Figure OI-72].

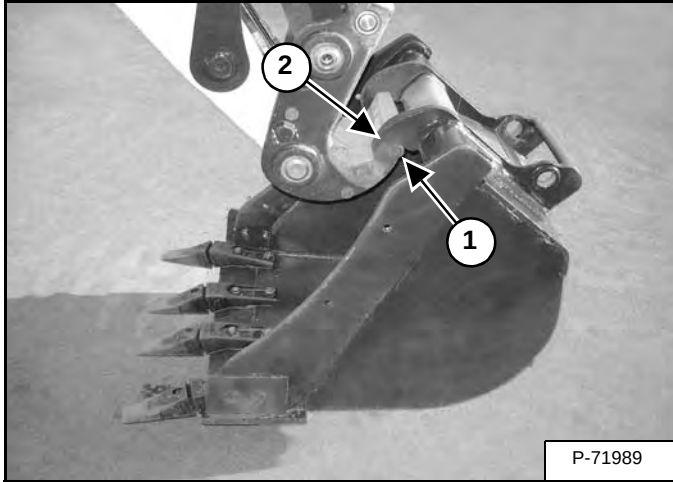
Dealer Copy -- Not for Resale

ATTACHMENTS (CONT'D)

Installing And Removing The Attachment (Hydraulic X-Change) (Cont'd)

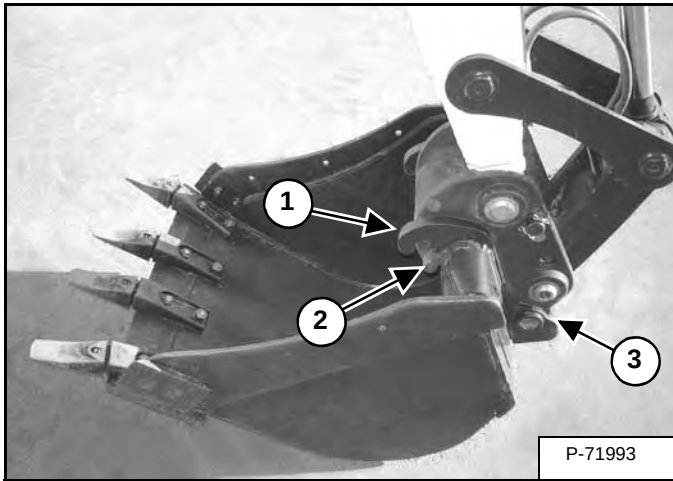
Installation (Cont'd)

Figure OI-73



Raise the boom until the X-Change pins (Item 1) engage the attachment hooks (Item 2) [Figure OI-73] on the bucket.

Figure OI-74



Raise the boom and extend (curl in) the bucket cylinder until the X-Change contacts the back of the attachment [Figure OI-74].

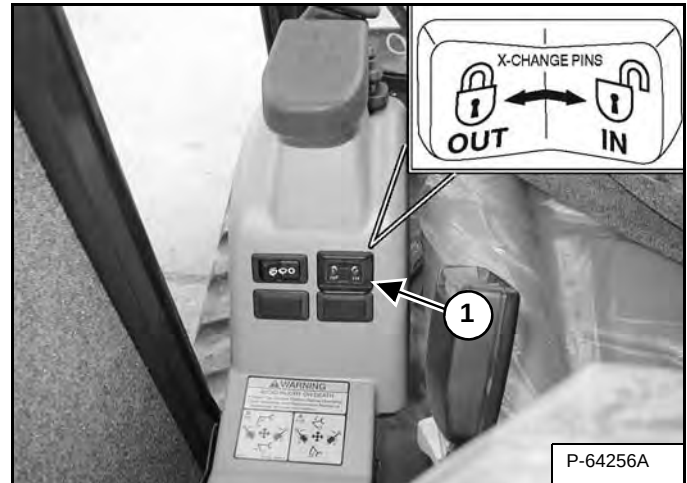
With the arm vertical, lower the boom until the hooks (Item 1) of the bucket disengage the X-Change pins (Item 2) and the plate (Item 3) [Figure OI-74] fully engages into the bucket crossmember.

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.

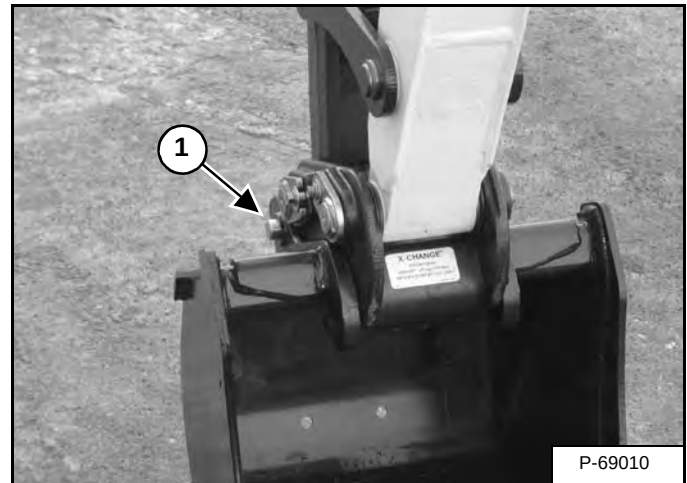
W-2119-0788

Figure OI-75



Press and hold the X-Change switch (Item 1) [Figure OI-75] to the **LEFT** and **FULLY EXTEND** the hydraulic pins.

Figure OI-76



Check that both hydraulic pins (Item 1) [Figure OI-76] are fully engaged to secure the attachment.

ATTACHMENTS (CONT'D)

Installing And Removing The Attachment (Hydraulic X-Change) (Cont'd)

Installation (Cont'd)

WARNING

Both hydraulic pins must be fully extended through the attachment mounting holes and locked with both retainer pins and clips. Failure to fully engage and lock hydraulic pins can allow attachment to come off and cause serious injury or death.

W-2507-0706

WARNING

Both hydraulic pins must be fully extended through the attachment mounting holes and locked with both retainer pins and clips. Failure to fully engage and lock hydraulic pins can allow attachment to come off and cause serious injury or death.

W-2507-0706

Figure OI-77

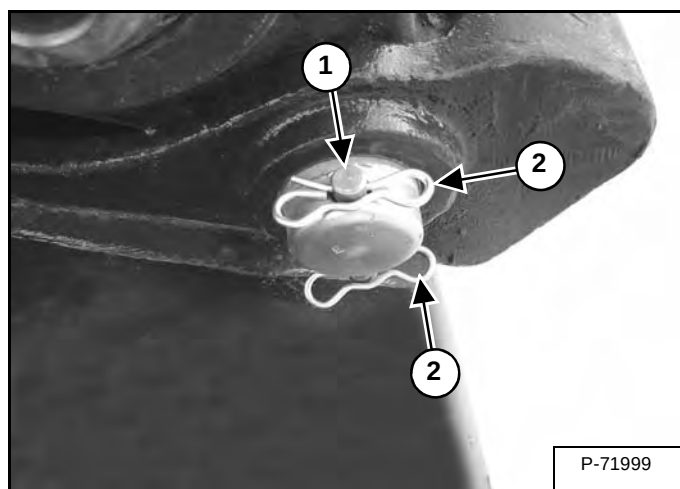
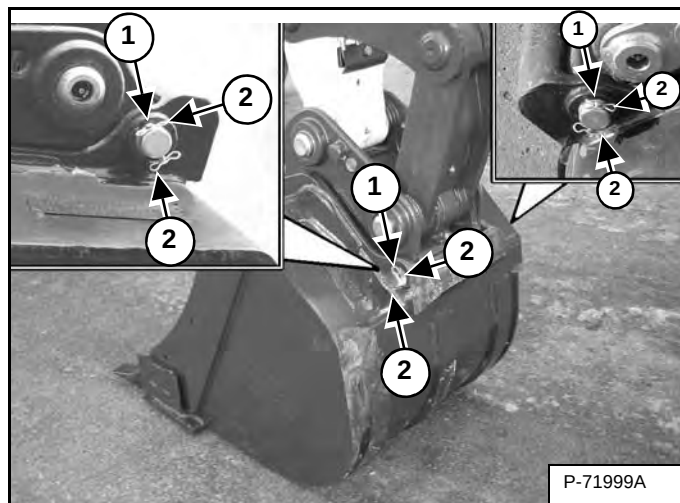


Figure OI-78



Stop the engine.

Install retainer pin (Item 1) and clips (Item 2) [Figure OI-77] and [Figure OI-78] into each hydraulic pin (both sides).

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ATTACHMENTS (CONT'D)

Installing And Removing The Attachment (Hydraulic X-Change) (Cont'd)

Removal

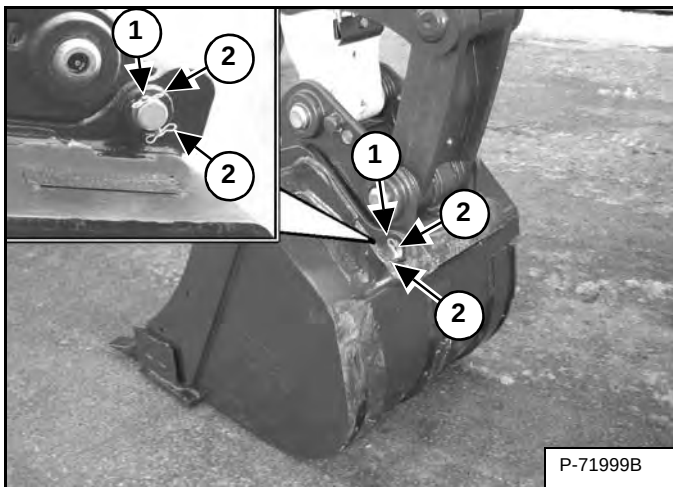
NOTE: Removal and installation of the bucket is shown. The procedure is the same for other attachments. Disconnect any hydraulic lines that are operated by hydraulic power before removing any attachments (breaker, auger, etc.).

! 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

Figure OI-79

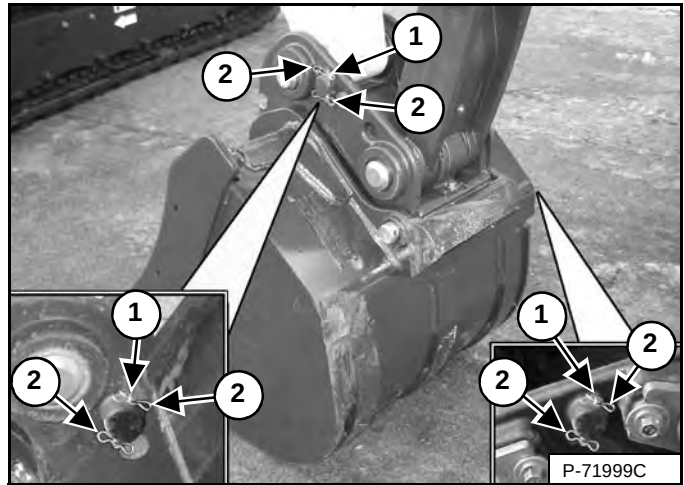


Park the excavator on a flat level surface. Put the attachment on the ground.

Stop the engine.

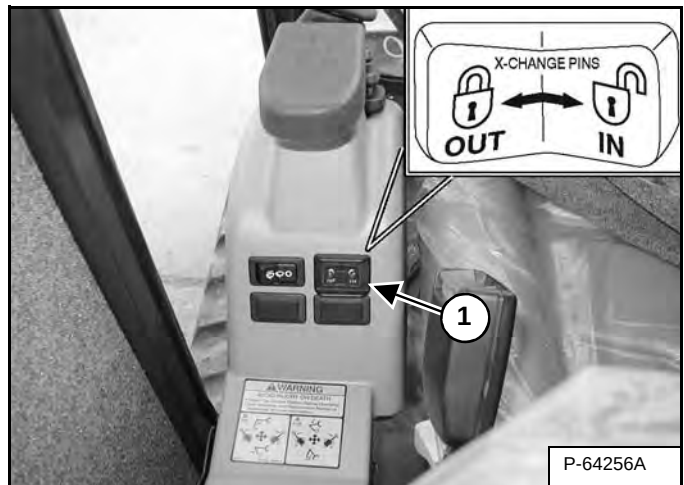
Remove retainer pin (Item 1) and retainer clips (Item 2) [Figure OI-77] and [Figure OI-79] from the hydraulic pin (both sides).

Figure OI-80



Install both retainer pins (Item 1) and clips (Item 2) [Figure OI-80] in the storage location.

Figure OI-81



Start the engine.

Press and hold the X-Change switch (Item 1) [Figure OI-81] on the left console to the **RIGHT** to **FULLY RETRACT** the hydraulic pins.

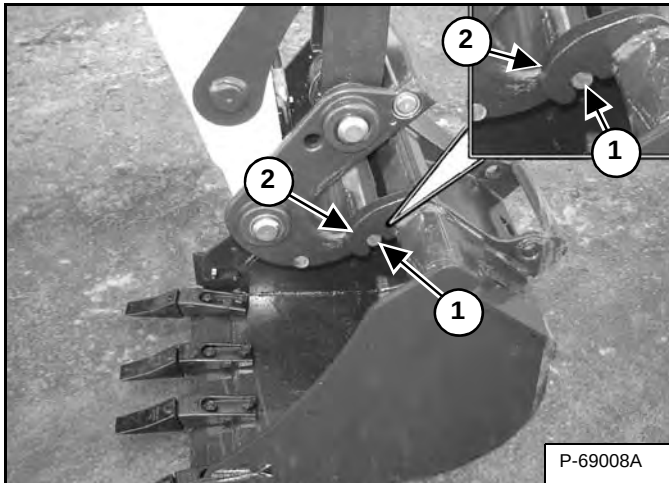
Dealer Copy -- Not for Resale

ATTACHMENTS (CONT'D)

Installing And Removing The Attachment (Hydraulic X-Change) (Cont'd)

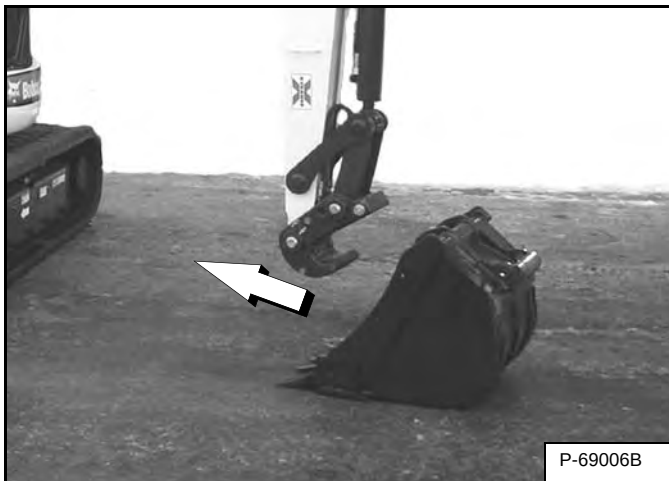
Removal (Cont'd)

Figure OI-82



Raise the boom and retract the bucket cylinder until the X-Change pins (Item 1) engage the attachment hooks (Item 2) [Figure OI-82] on the bucket.

Figure OI-83



Fully retract the bucket cylinder (bucket dump).

Lower the boom and arm until the attachment is on the ground and the X-Change pins are disengaged from the attachment hooks.

Move the arm toward the excavator until the X-Change pins are clear of the attachment [Figure OI-83].

ATTACHMENTS (CONT'D)

Installing And Removing The Attachment (Pin-On X-Change)

Installation

Use the pin on X-Change when installing new attachments that are equipped with the pin on X-Change bracket.

NOTE: Installation and removal of the bucket is shown. The procedure is the same for other attachments. Disconnect any hydraulic lines that are operated by hydraulic power before removing any attachments (breaker, auger, etc.).

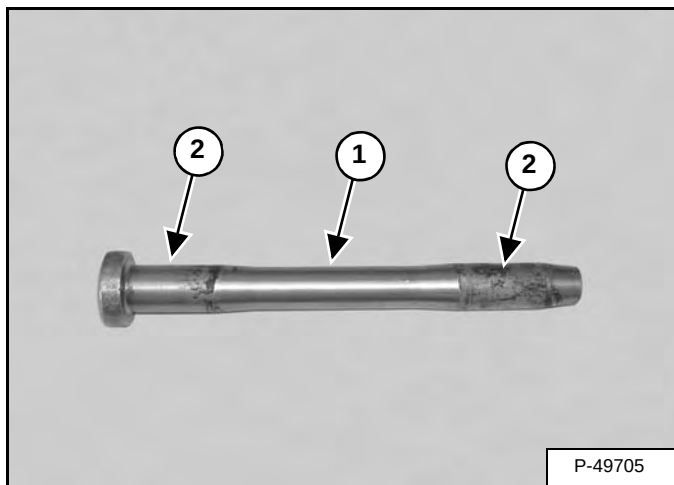
! WARNING

AVOID INJURY OR DEATH

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

W-2052-0907

Figure OI-84



Inspect the pin (Item 1) [Figure OI-84] for wear or damage. Replace the pin as needed.

Apply a light coat of grease to the ends of the pin (Item 2) [Figure OI-84].

Figure OI-85



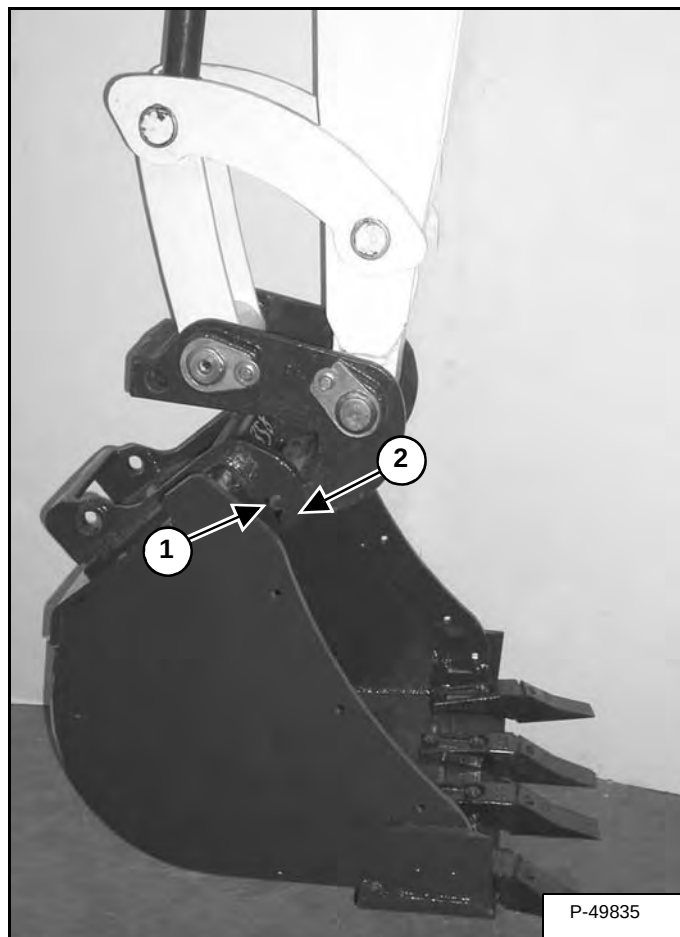
Start the engine and move the arm toward the bucket [Figure OI-85].

ATTACHMENTS (CONT'D)

Installing And Removing The Attachment (Pin-On X-Change) (Cont'd)

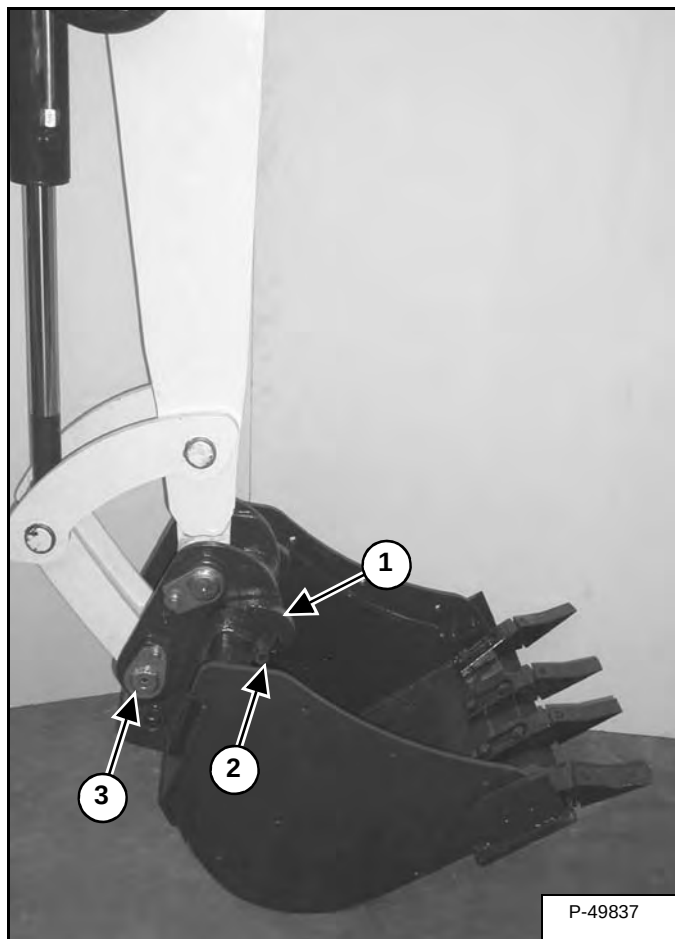
Installation (Cont'd)

Figure OI-86



Raise the boom until the pins (Item 1) engage the hooks (Item 2) [Figure OI-86] on the bucket.

Figure OI-87



Raise the boom and extend the bucket cylinder until the X-Change contacts the attachment back [Figure OI-87].

With the arm vertical, lower the boom until the hooks (Item 1) of the bucket disengage the pins (Item 2) of the X-Change and the plate (Item 3) [Figure OI-87] fully engages in the bucket crossmember.



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

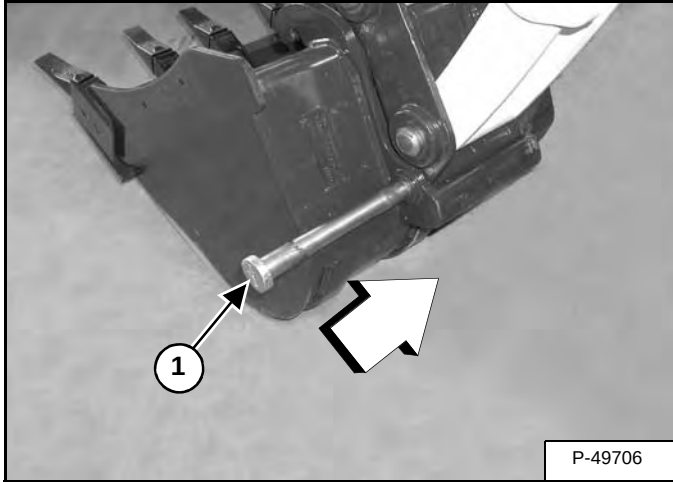
Dealer Copy -- Not for Resale

ATTACHMENTS (CONT'D)

Installing And Removing The Attachment (Pin-On X-Change) (Cont'd)

Installation (Cont'd)

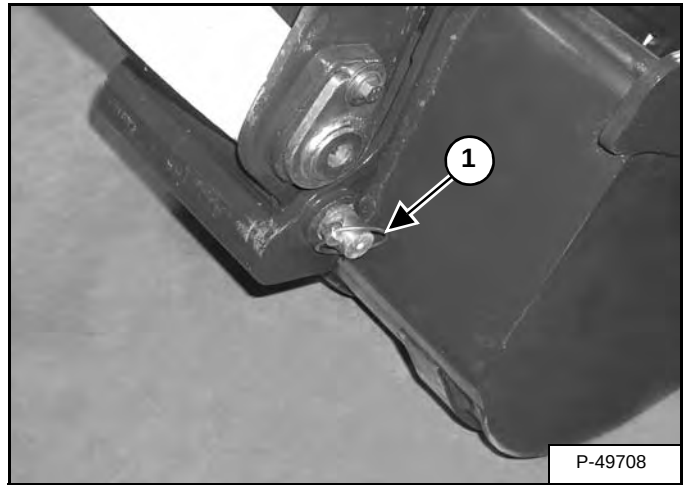
Figure OI-88



Stop the engine. Turn the start key to the ON position and move both hydraulic control levers to relieve hydraulic pressure. Exit the excavator.

Install the pin (Item 1) **[Figure OI-88]** through the bucket mount and X-Change.

Figure OI-89



Install the retainer pin (Item 1) **[Figure OI-89]**.

Check for proper installation.

Lift the attachment and fully extend and retract the bucket cylinder.

ATTACHMENTS (CONT'D)

Installing And Removing The Attachment (Pin-On X-Change) (Cont'd)

Removal

NOTE: Removal and installation of the bucket is shown. The procedure is the same for other attachments. Disconnect any hydraulic lines that are operated by hydraulic power before removing any attachments (breaker, auger, etc.).

WARNING

AVOID INJURY OR DEATH

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

W-2052-0907

Figure OI-90



Park the excavator on a flat level surface. Put the bucket on the ground [Figure OI-90].

With the engine off, turn the start key to the ON position and move both hydraulic control levers to relieve hydraulic pressure.

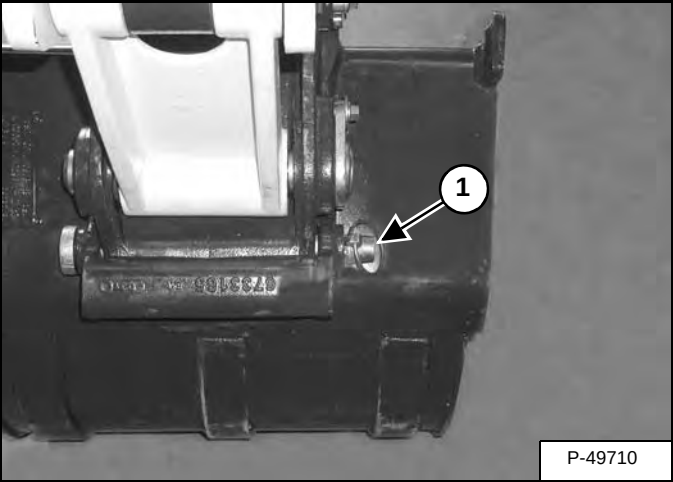
Dealer Copy -- Not for Resale

ATTACHMENTS (CONT'D)

Installing And Removing The Attachment (Pin-On X-Change) (Cont'd)

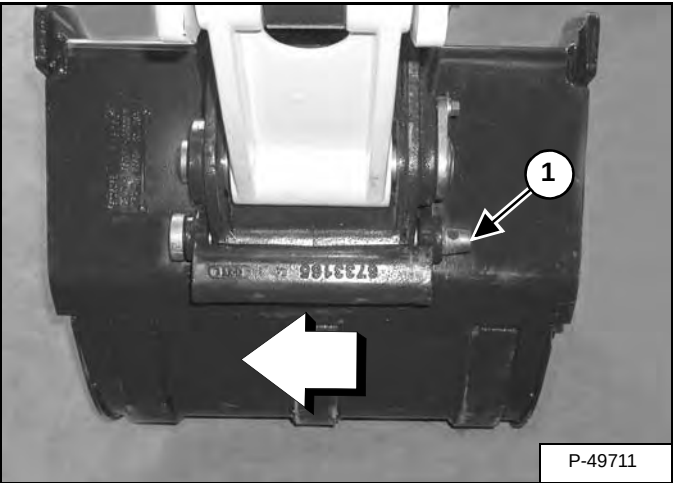
Removal (Cont'd)

Figure OI-91



Remove the retainer pin (Item 1) [Figure OI-91].

Figure OI-92



Drive the pin (Item 1) [Figure OI-92] out of the bucket and X-Change mount.

! WARNING

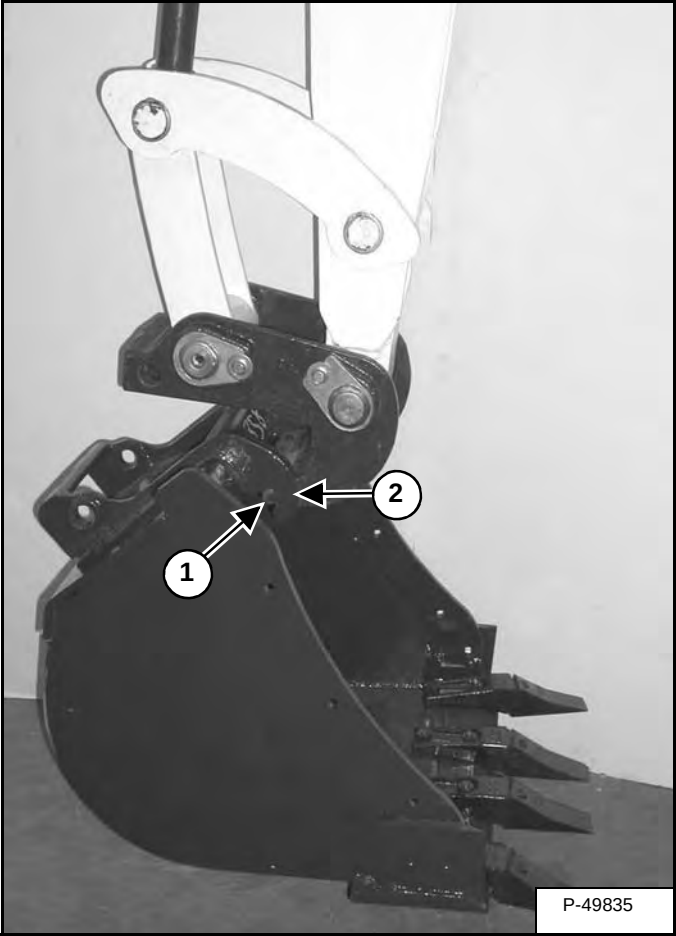
AVOID INJURY OR DEATH

Wear safety glasses to prevent eye injury when any of the following conditions exist:

- When fluids are under pressure.
- Flying debris or loose material is present.
- Engine is running.
- Tools are being used.

W-2019-0907

Figure OI-93



Start the engine, raise the boom approximately one foot and retract the bucket cylinder until the X-Change pins (Item 1) engage the hooks (Item 2) [Figure OI-93] on the bucket.

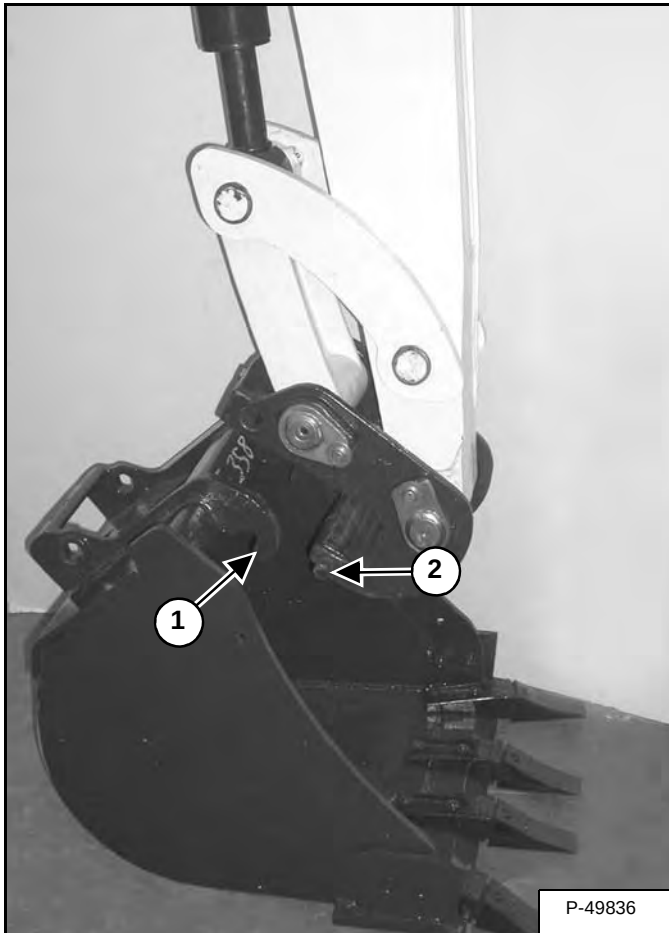
Dealer Copy -- Not for Resale

ATTACHMENTS (CONT'D)

Installing And Removing The Attachment (Pin-On X-Change) (Cont'd)

Removal (Cont'd)

Figure OI-94



Fully retract the bucket cylinder and lower the boom and arm until the bucket is on the ground, and the X-Change pins (Item 1) are disengaged from the hooks (Item 2) **[Figure OI-94]**.

Move the arm toward the excavator until the X-Change pins are clear of the bucket.

ATTACHMENTS (CONT'D)

Installing And Removing The Attachment (Bolt-On X-Change)

Installation

Use the bolt on X-Change components when installing older attachments that do not have the pin retention provision. Bolt on components are supplied with the excavator and are stored under the right side cover.

NOTE: Removal and installation of the bucket is shown. The procedure is the same for other attachments. Disconnect any hydraulic lines that are operated by hydraulic power before removing any attachments (breaker, auger, etc.).

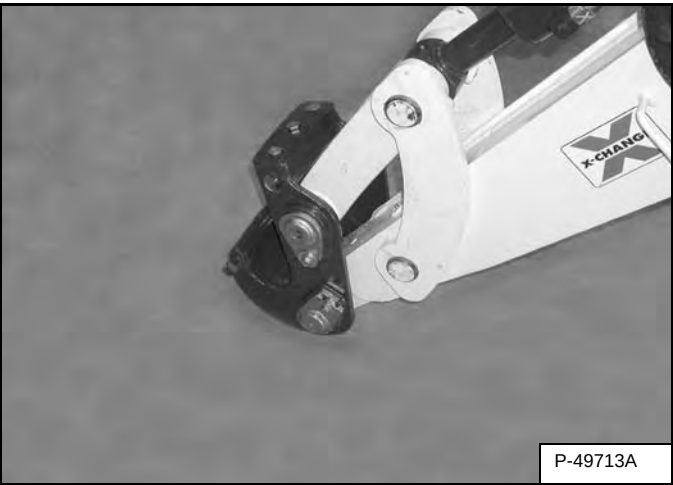
**WARNING**

AVOID INJURY OR DEATH

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

W-2052-0907

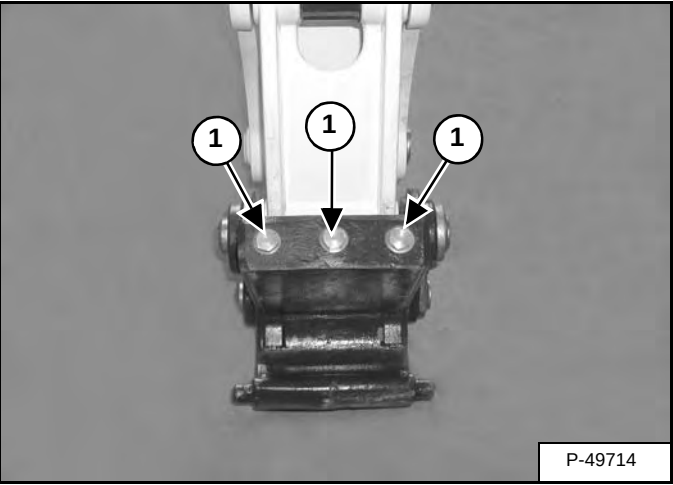
Figure OI-95



Fully retract the bucket cylinder and lower the arm to the ground [Figure OI-95].

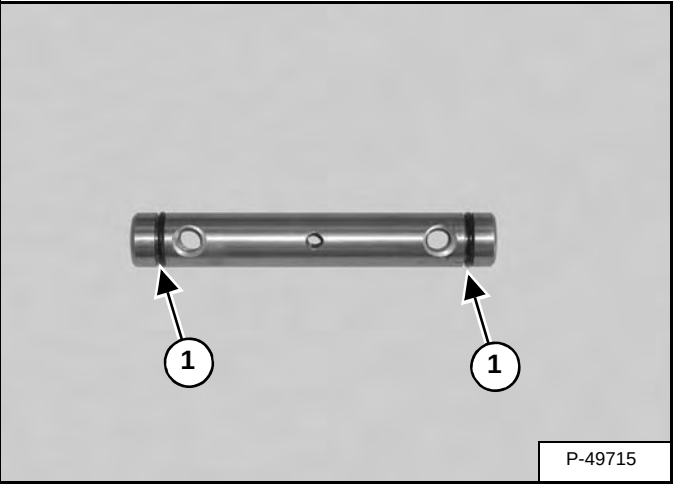
With the engine off, turn the start key to the ON position and move both hydraulic control levers to relieve hydraulic pressure.

Figure OI-96



Remove the three plugs (Item 1) [Figure OI-96].

Figure OI-97



Apply grease to the O-rings (Item 1) [Figure OI-97].

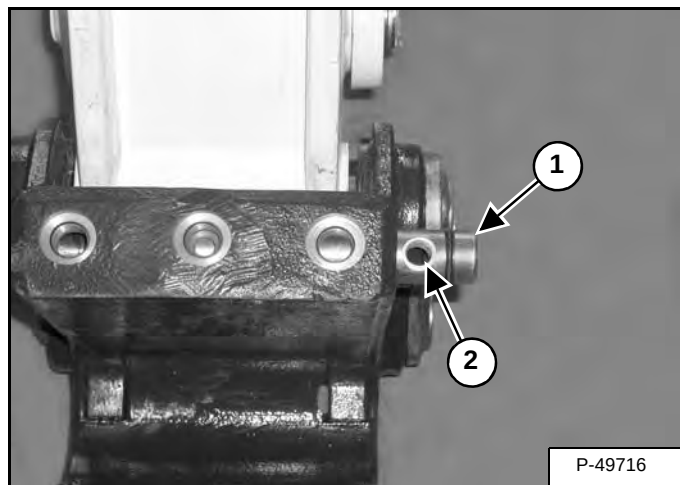
Dealer Copy -- Not for Resale

ATTACHMENTS (CONT'D)

Installing And Removing The Attachment (Bolt-On X-Change) (Cont'd)

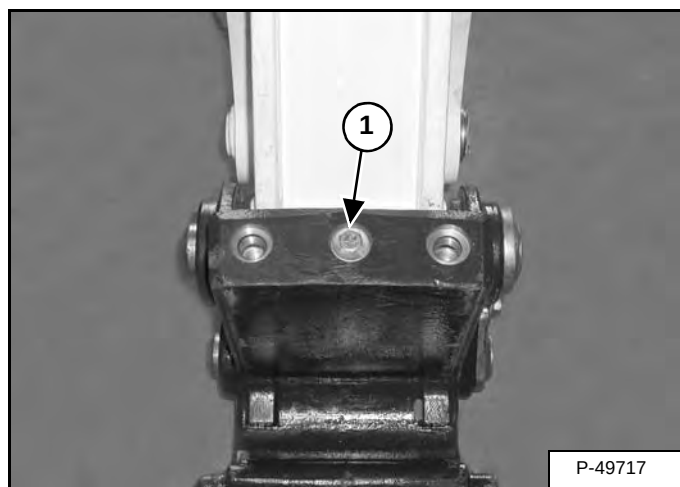
Installation (Cont'd)

Figure OI-98



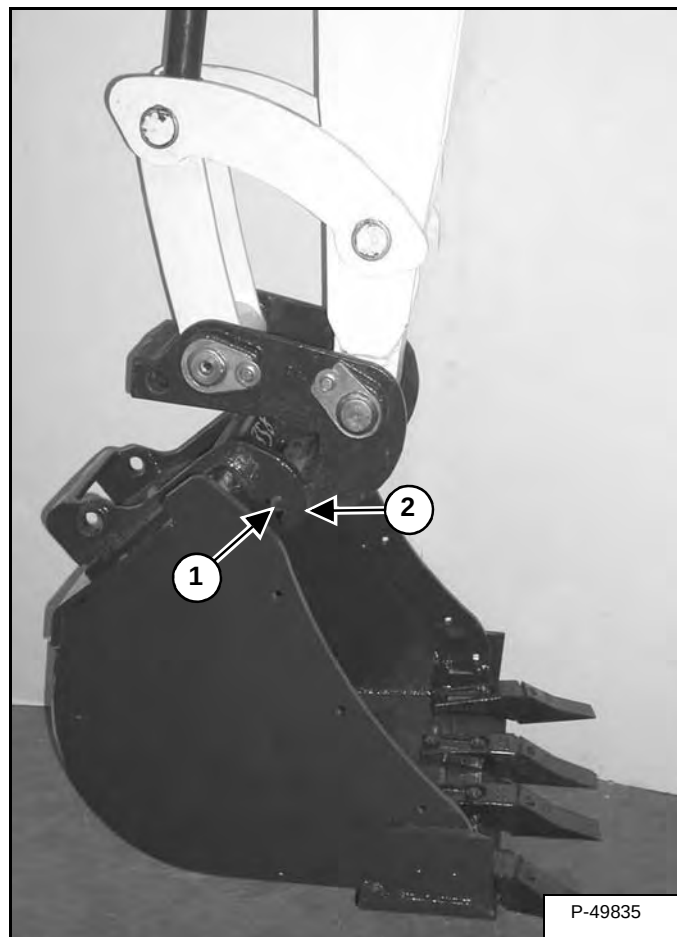
Install the pin (Item 1) in the X-Change. Orientate the bolt holes (Item 2) [Figure OI-98] as shown.

Figure OI-99



Install the bolt (Item 1) [Figure OI-99] and washer through the X-Change and into the pin.

Figure OI-100



Start the engine and move the arm toward the bucket. Raise the boom until the pins (Item 1) engage the hooks (Item 2) [Figure OI-100] on the bucket.

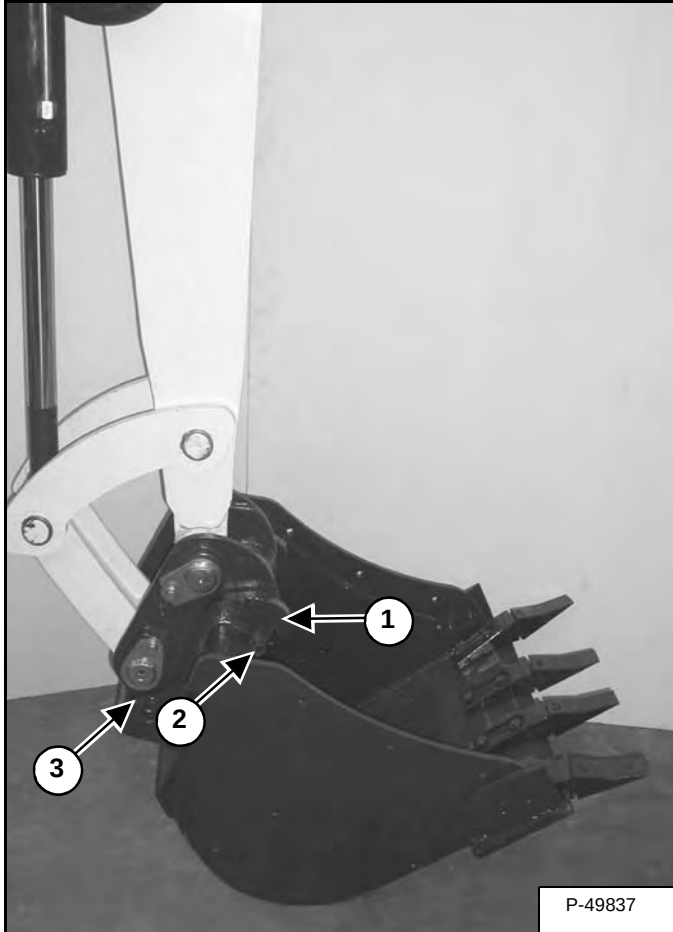
Dealer Copy -- Not for Resale

ATTACHMENTS (CONT'D)

Installing And Removing The Attachment (Bolt-On X-Change) (Cont'd)

Installation (Cont'd)

Figure OI-101



Raise the boom, and extend the bucket cylinder until the bucket is in the position shown **[Figure OI-101]**.

With the arm vertical, lower the boom until the hooks (Item 1) of the bucket disengage the pins (Item 2) of the X-Change and plate (Item 3) **[Figure OI-101]** engages in the bucket crossmember.

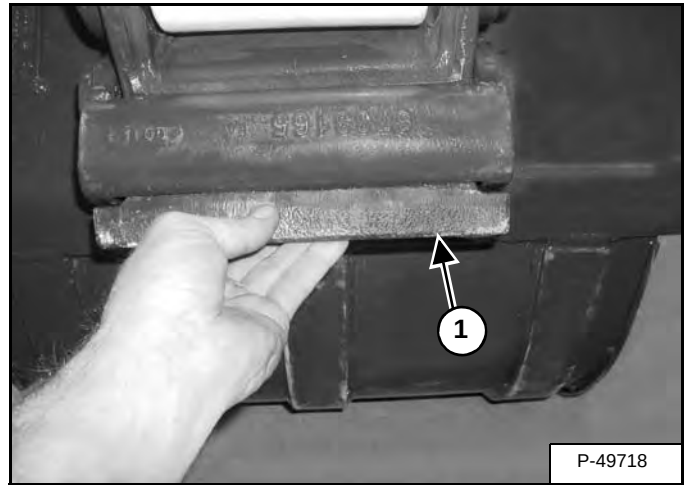
Stop the engine. Turn the start key to the ON position and move both hydraulic control levers to relieve hydraulic pressure.

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

Figure OI-102



Install the plate (Item 1) **[Figure OI-102]**.

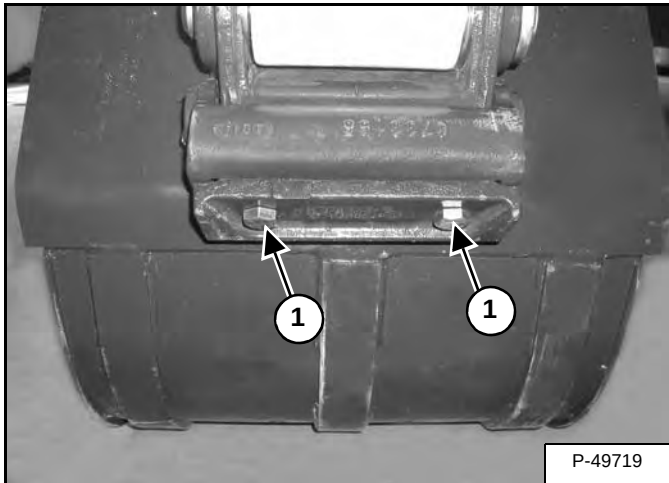
Dealer Copy -- Not for Resale

ATTACHMENTS (CONT'D)

Installing And Removing The Attachment (Bolt-On X-Change) (Cont'd)

Installation (Cont'd)

Figure OI-103



Install the bolts (Item 1) **[Figure OI-103]** through the plate and into the X-Change.

Tighten the bolts to 130 ft.-lb. (177 N•m) torque. Re-torque the bolts after every eight hours of operation.

Check for proper installation.

Lift the attachment and fully extend and retract the bucket cylinder.

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

ATTACHMENTS (CONT'D)

Installing And Removing The Attachment (Bolt-On X-Change) (Cont'd)

Removal

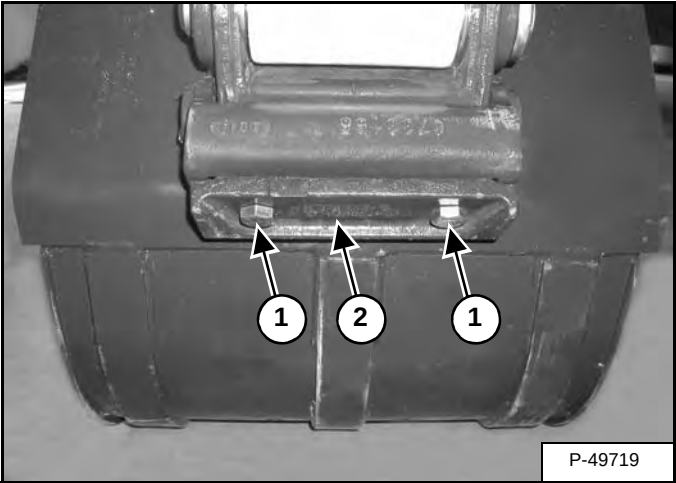
Figure OI-104



Park the excavator on a flat, level surface. Put the bucket on the ground [Figure OI-104].

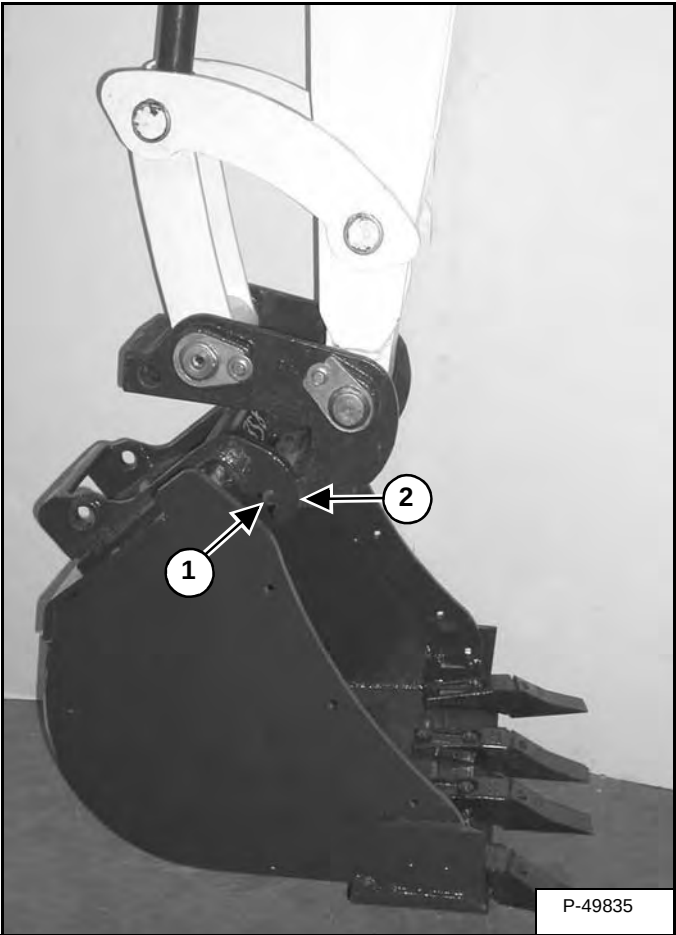
With the engine off, turn the start key to the ON position and move both hydraulic control levers to relieve hydraulic pressure.

Figure OI-105



Remove the two bolts (Item 1) and plate (Item 2) [Figure OI-105].

Figure OI-106



Start the engine, raise the boom approximately one foot and extend the bucket cylinder until the X-Change pins (Item 1) engage the hooks (Item 2) [Figure OI-106] on the bucket.

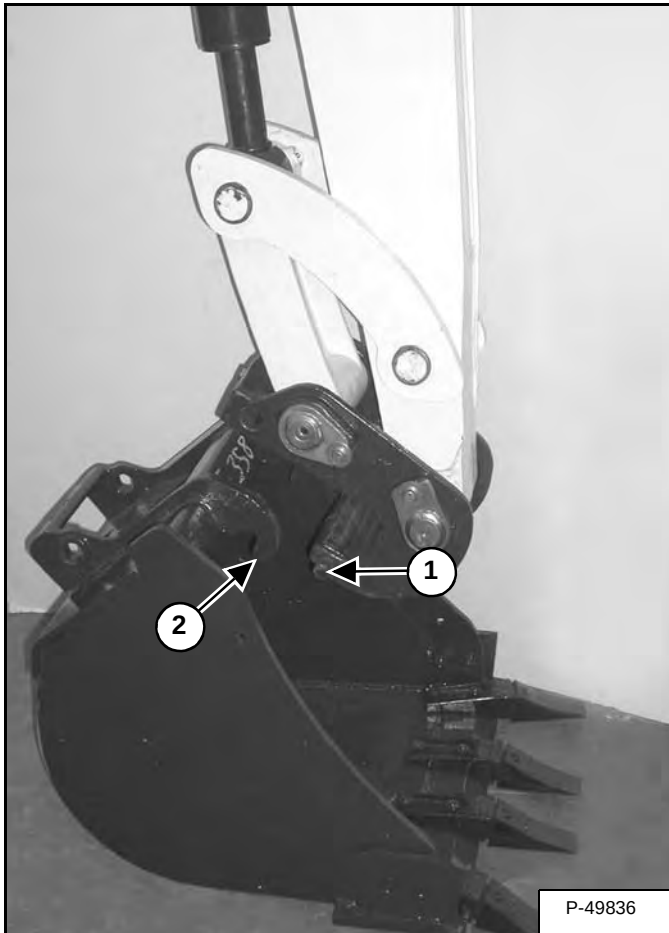
Dealer Copy -- Not for Resale

ATTACHMENTS (CONT'D)

Installing And Removing The Attachment (Bolt-On X-Change) (Cont'd)

Removal (Cont'd)

Figure OI-107



Fully retract the bucket cylinder and lower the boom and arm until the bucket is on the ground, and the X-Change pins (Item 1) are disengaged from the hooks (Item 2) **[Figure OI-107]**.

Move the arm toward the excavator until the X-Change pins are clear of the bucket.

ATTACHMENTS (CONT'D)

Installing And Removing The Attachment (Pin-On Attachment)

Installation

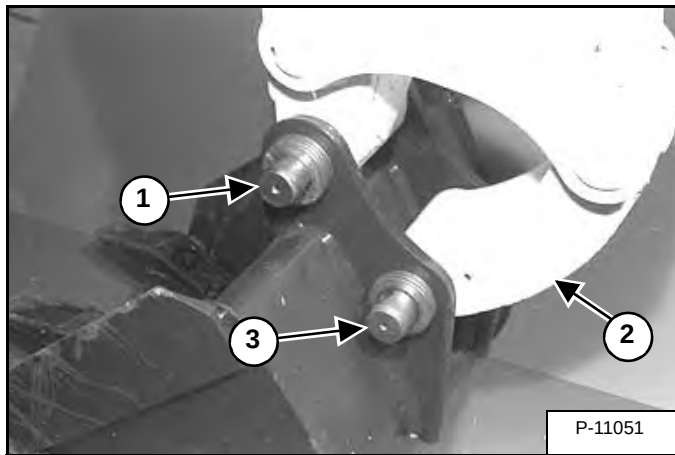
WARNING

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

Figure OI-108

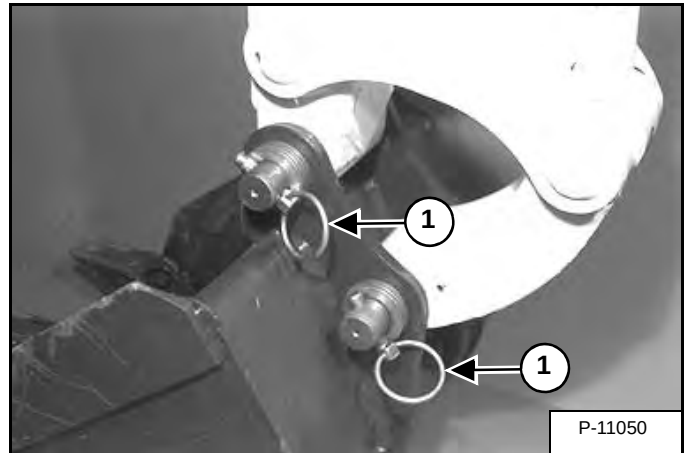


Install the arm into the bucket and align the mounting hole.

Install the pin (Item 1) [Figure OI-108] and washers.

Install the link (Item 2) in the bucket and align the mounting hole. Install the pin (Item 3) [Figure OI-108] and washers

Figure OI-109



Install the two retainer pins (Item 1) [Figure OI-109]. Install grease in the pin grease fittings.

Removal

Park the excavator on a flat surface and lower the bucket fully.

Remove the two retainer pins (Item 1) [Figure OI-109].

Remove the washers and pins (Item 1 & 3) [Figure OI-108].

Do not damage the dust seals in the arm.

WARNING

AVOID INJURY OR DEATH

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

W-2052-0907

OPERATING PROCEDURE

Inspect The Work Area

Before beginning operation, inspect the work area for unsafe conditions.

Look for sharp drop-offs or rough terrain. Have underground utility lines (gas, water, sewer, irrigation, etc.) located and marked. Work slowly in areas of underground utilities.

Remove objects or other construction material that could damage the excavator or cause personal injury.

Always check ground conditions before starting your work:

- Look for signs of instability such as cracks or settlement.
- Be aware of weather conditions that can affect ground stability.
- Check for adequate traction if working on a slope.

Basic Operating Instructions

When operating on a public road or highway, always follow local regulations. For example: A slow moving vehicle (SMV) sign, or direction signals may be required.

Run the engine at low idle speed to warm the engine and hydraulic system before operating the excavator.

IMPORTANT

Machines warmed up with moderate engine speed and light load have longer life.

I-2015-0284

New operators must operate the excavator in an open area without bystanders. Operate the controls until the excavator can be handled at an efficient and safe rate for all conditions of the work area.

Operating Near An Edge Or Water

Keep the excavator as far back from the edge as possible and the excavator tracks perpendicular to the edge so that if part of the edge collapses, the excavator can be moved back.

Always move the excavator back at any indication the edge may be unstable.

Lowering The Work Equipment (Engine STOPPED)

The hydraulic control levers control the movement of the boom, arm, bucket and upperstructure slew functions.

The console must be in the locked down position, and the key switch in the ON position.

Use the control lever to lower the boom.

Figure OI-110



The joystick lock switch disengages the hydraulic control functions from the joysticks when the console are raised [Figure OI-110].

NOTE: If the engine stops, the boom/bucket (attachments) can be lowered to the ground using hydraulic pressure in the accumulator.

The control console(s) must be in the locked down position, and the key switch in the ON position.

Use the control lever to lower the boom.

Lower the control console(s) to engage the hydraulic control functions of the joysticks [Figure OI-110].

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OPERATING PROCEDURE (CONT'D)

Horsepower Control System

Bobcat ZHS FastTrack™ excavators are equipped with a selectable Horsepower Control System. The HPC system is designed to optimize engine horsepower when using the excavator drive function. With HPC, the operator can select the best horsepower management for there application.

The Horsepower Control System only affects the drive circuit. Digging performance is NOT affected.

NOTE: The excavator controller must have version 41.0 or higher software installed for the following procedure to be available. See your Bobcat dealer for additional information or to have your controller software upgraded.

The engine horsepower to hydraulic pressure curve can be adjusted to better suit the application that the excavator is being used for.

There are four different selections available. The excavator is factory set using HPC1. Also available are HPC2, HPC3 and HPC4.

Use the HPC1 setting if you are doing heavy dozing and want the controller to fully adjust the horsepower to hydraulic pressure. In this setting the controller will adjust the hydraulic pressure lower to maintain full engine RPM as higher drive forces are detected.

The HPC2 setting will decrease the controller assist on the horsepower to hydraulic pressure. In this position the operator will need to decrease drive force by reducing drive lever position or the engine will start to lug down.

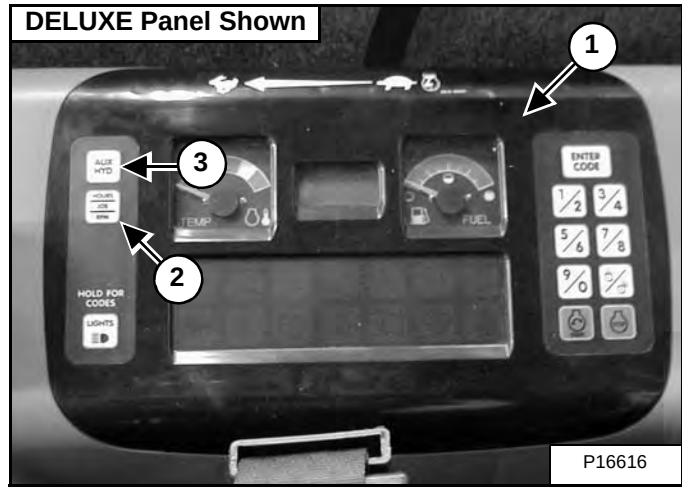
The HPC3 setting will further decrease the controller assist on the horsepower to hydraulic pressure. The operator will need to control drive force by reducing drive lever position or the engine will start to lug.

Using the HPC4 setting will be almost complete operator control over the horsepower to hydraulic pressure. You will need to control the travel levers to avoid engine lugging. This position is for experienced operator's or for driving on level ground and not dozing.

HPC LEVEL	DESCRIPTION	DRIVE CHARACTERISTICS
1	100% Horsepower Control (machine controls the engine lug)	Least amount of engine lug. Tuned for full throttle engine setting. Not suited for idle or half throttle engine settings.
2	66% Horsepower Control	

HPC LEVEL	DESCRIPTION	DRIVE CHARACTERISTICS
3	33% Horsepower Control	
4	0% Horsepower Control (operator controls the engine lug)	Allows the most drive torque possible. Better for driving at idle or half throttle. Can result in significant engine lug (operator must de-stroke drive levers to prevent engine lug).

Figure OI-111



All changes to the controller will be performed using the display panel (Item 1) [Figure OI-111].

To change the controller HPC setting, do the following:

1. Turn key OFF (for key models) or press the STOP button (for keyless models).
2. Press and release the Hours/Job/RPM button (Item 2) [Figure OI-111] to enter Hour Mode.
3. Continue pressing and releasing the Hours/Job/RPM button (Item 2) [Figure OI-111] until the RPM screen appears.
4. Press and hold the Hours/Job/RPM button (Item 2) [Figure OI-111] until the HPC menu appears.
5. Press and release the Aux Hyd button (Item 3) [Figure OI-111] until the desired HPC selection is obtained (HPC1, HPC2, HPC3 or HPC4).
6. Press and hold the Hours/Job/RPM button (Item 2) [Figure OI-111] until "done" is displayed to save the selection. (You must complete step 6 for the controller to accept the new HPC setting. If step 6 is not completed, the controller will return to the previous selection.)

Your excavator will now stay in the current HPC mode until a new HPC selection is made.

OPERATING PROCEDURE (CONT'D)

Lifting A Load

Do not exceed the rated load capacity. (See LIFT CHART on Page MST-4)

! WARNING

AVOID INJURY OR DEATH

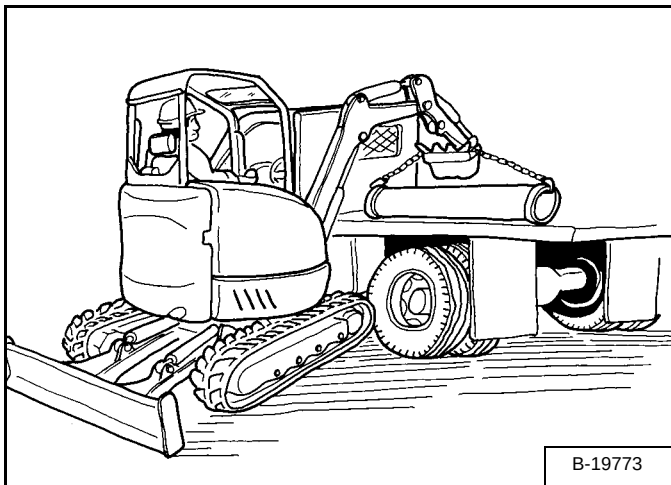
Do not exceed Rated Operating Capacity (ROC). Excessive load can cause tipping or loss of control.

W-2053-0903

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

Wrap the chain assembly around the bucket mounting plate.

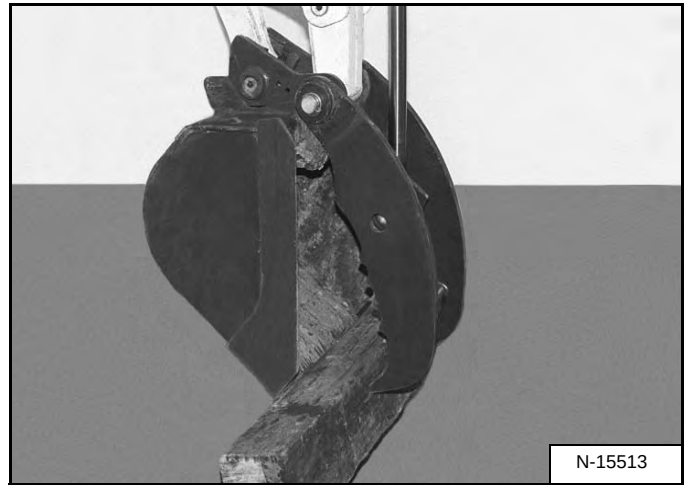
Figure OI-112



Make sure the load is evenly weighted and centered on the lifting chain, and is secured to prevent the load from shifting [Figure OI-112].

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

Figure OI-113



The optional lifting clamp attachment gives the excavator a wider range of use and mobility for debris removal [Figure OI-113].

The lifting clamp cylinder is operated by the auxiliary hydraulic system.

The lifting clamp cylinder must be fully retracted when the machine is being used for excavating.

The lift capacities are reduced by 270 lb. (122 kg) if the excavator is equipped with the optional lifting clamp.

! 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

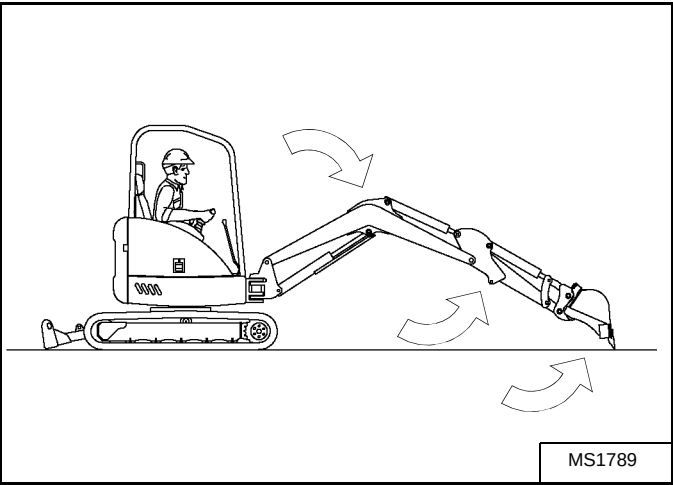
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OPERATING PROCEDURE (CONT'D)

Excavating

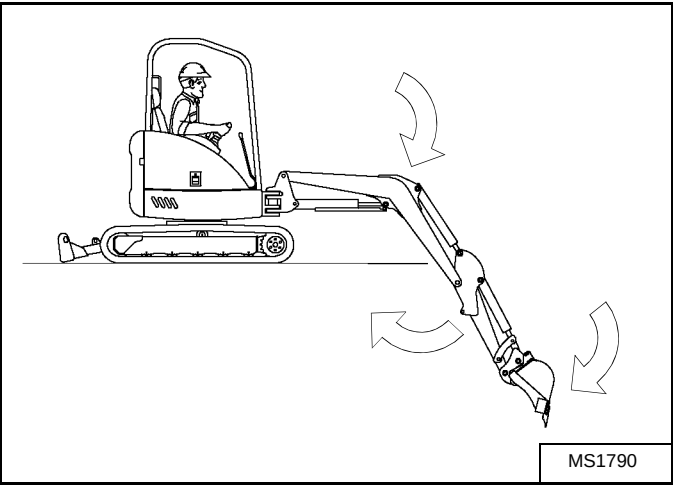
Lower the blade to provide stability.

Figure OI-114



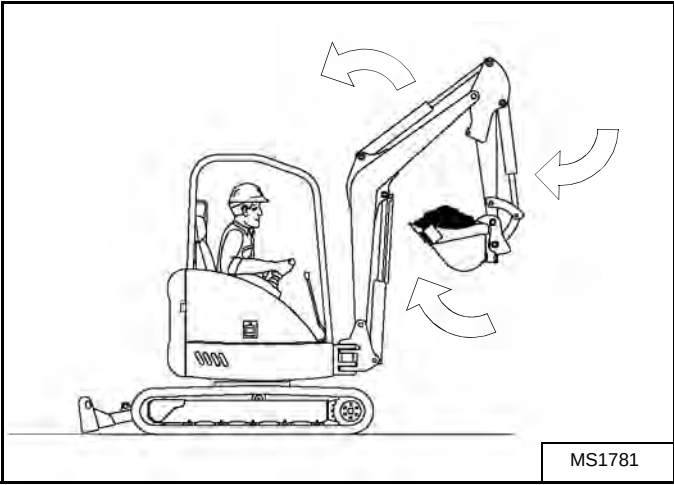
Extend the arm, lower the boom, and open the bucket [Figure OI-114].

Figure OI-115



Retract the arm, while lowering boom and curling the bucket [Figure OI-115].

Figure OI-116



Raise the boom, retract the arm and curl the bucket [Figure OI-116].

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

**WARNING**

AVOID INJURY OR DEATH

Check area to be excavated for overhead or underground electrical power lines. Keep a safe distance from electrical power lines.

LINE VOLTAGE	MINIMUM APPROACH DISTANCE
50 kV	At least 10 ft. (3m)
230 kV	At least 16 ft. (5m)
740 kV	At least 33 ft. (10m)

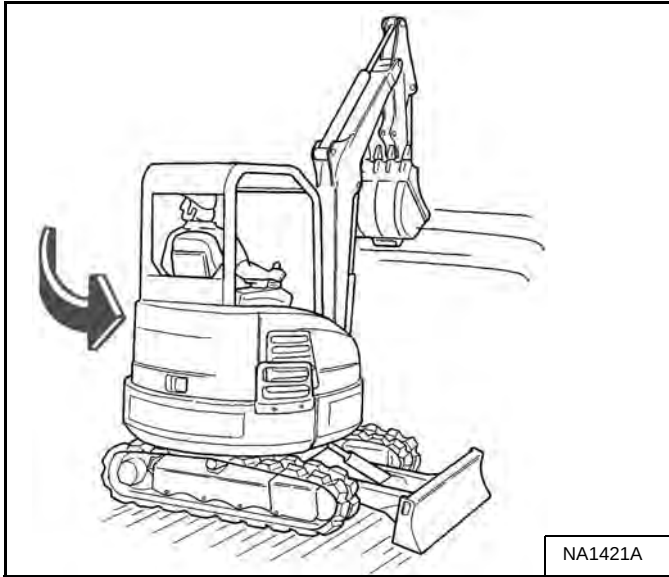
W-2757-0908

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OPERATING PROCEDURE (CONT'D)

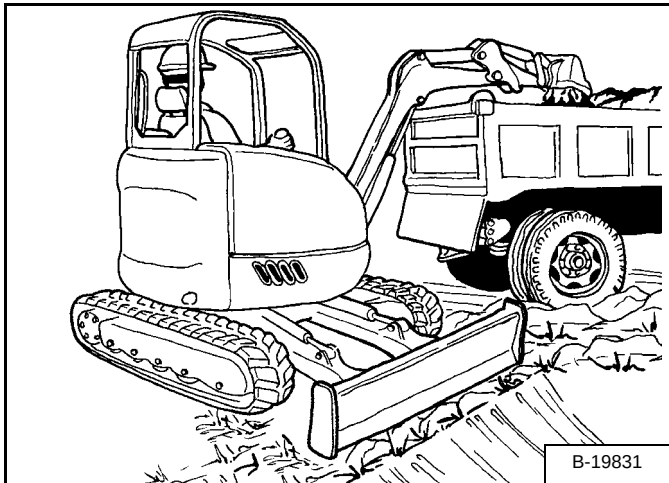
Excavating (Cont'd)

Figure OI-117



Look in the direction of rotation and make sure there are no bystanders in the work area before rotating the upperstructure [Figure OI-117].

Figure OI-118



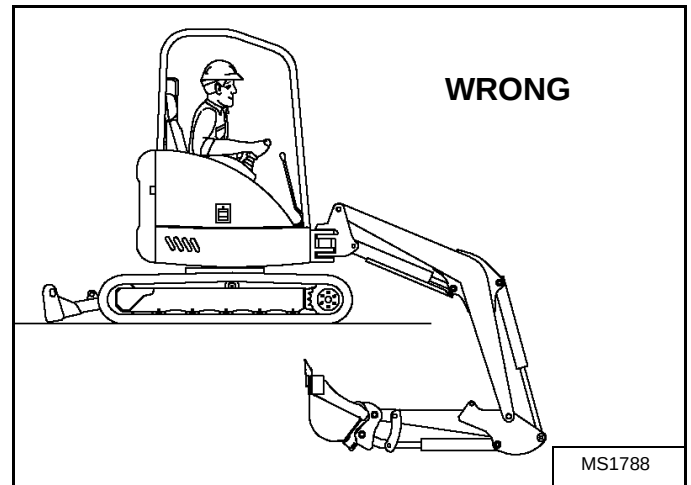
Extend the arm and uncurl the bucket to dump the material into a pile or truck [Figure OI-118].

IMPORTANT

Avoid operating hydraulics over relief pressure. Failure to do so will overheat hydraulic components.

I-2220-0503

Figure OI-119



Do not dig under the excavator [Figure OI-119].

Do not use the bucket as a breaker or pile driver. It is better to excavate hard or rocky ground after breaking it with other equipment. This will reduce damage to the excavator.

Do not move the excavator while the bucket is in the ground.

Dig only by moving the boom and arm toward the excavator.

Do not back dig (digging by moving the boom and arm away from the excavator). Damage to the X-Change and attachments may occur.

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OPERATING PROCEDURE (CONT'D)

Boom Swing

Figure OI-120

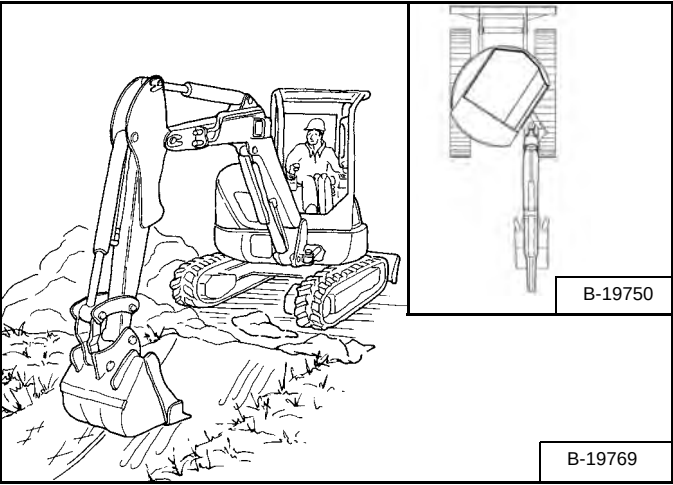


Figure OI-121

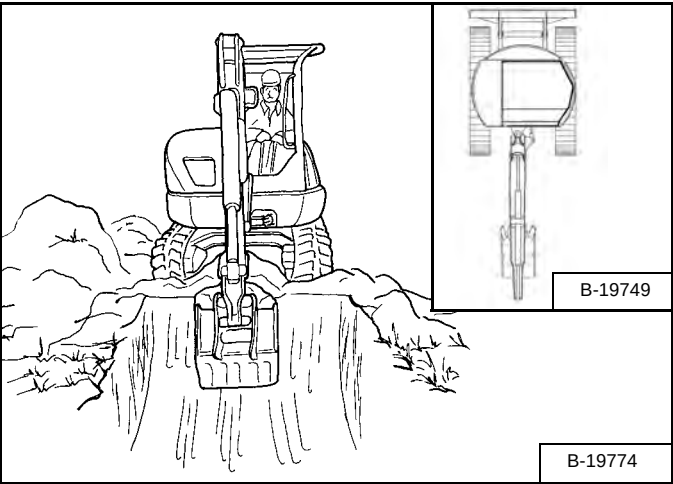
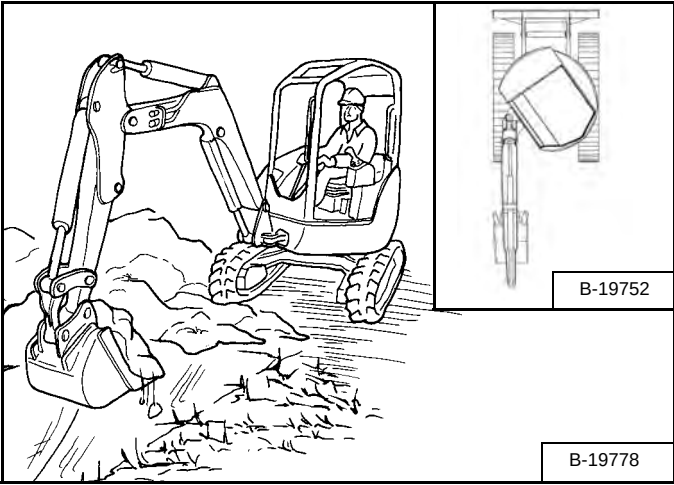
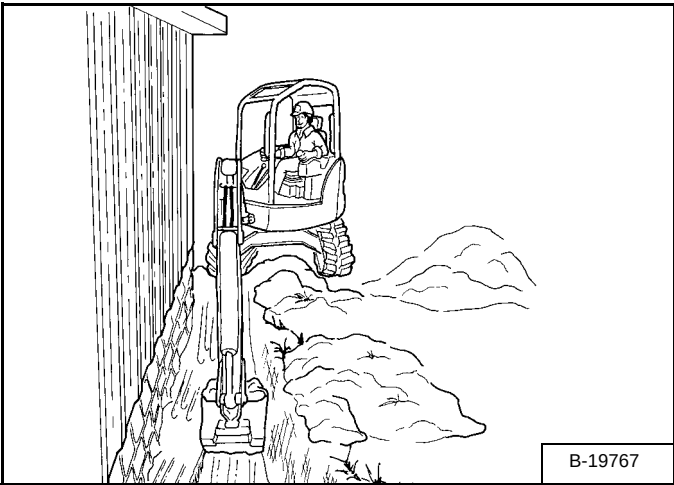


Figure OI-122



Slew the upperstructure, swing the boom to the right [Figure OI-120], center [Figure OI-121] and left [Figure OI-122] to dig a square hole the width of the machine without repositioning the excavator.

Figure OI-123



The boom offset allows the operator to dig close to buildings and other structures [Figure OI-123].

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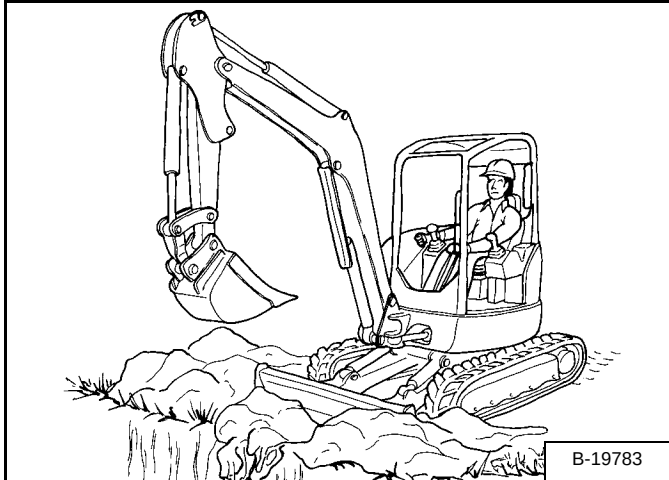
Backfilling

IMPORTANT

Avoid impacting objects with the blade. Damage to blade and undercarriage components may occur.

I-2256-0507

Figure OI-124



Use the blade to backfill the trench or hole after excavating [Figure OI-124].

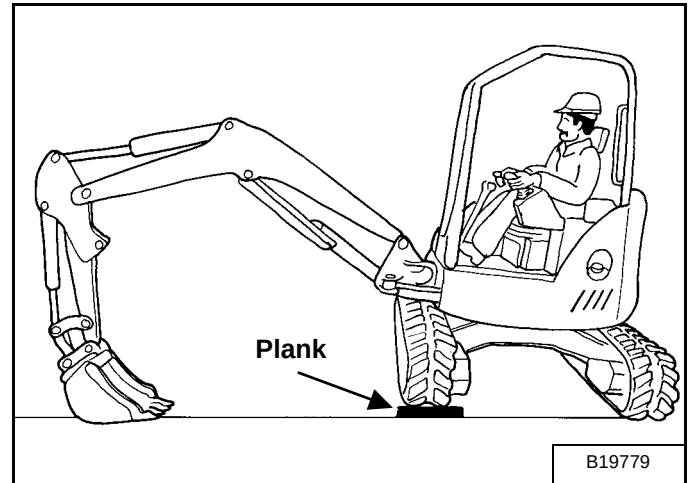
Driving The Excavator

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.

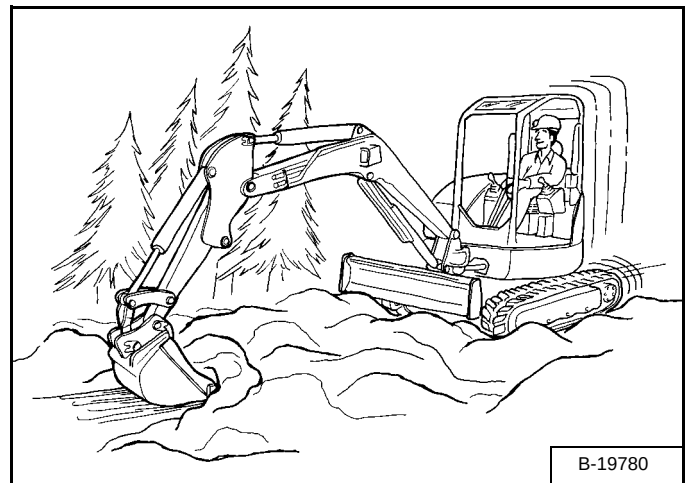
Figure OI-125



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 [Figure OI-125].

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

Figure OI-126



The bucket may also be used to pull the excavator. Raise the blade, extend the arm and lower the boom. Operate the boom and arm in a digging manner [Figure OI-126].

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OPERATING PROCEDURE (CONT'D)

Operating On Slopes

WARNING

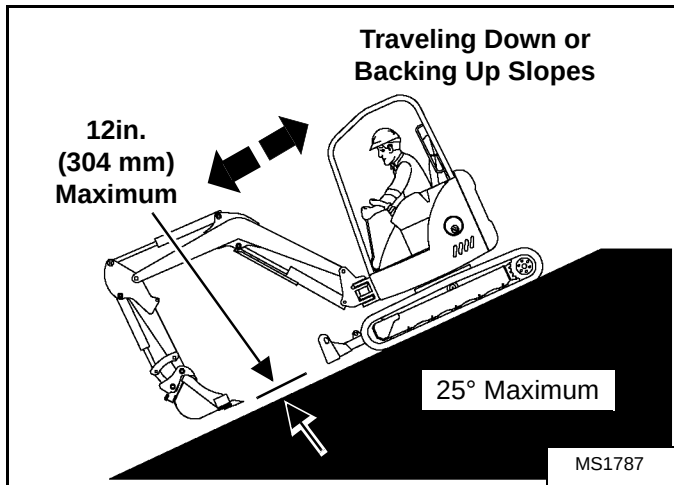
AVOID INJURY OR DEATH

- Do not travel across or up slopes that are over 15 degrees.
- Do not travel down or back up slopes that exceed 25 degrees.
- Look in the direction of travel.

W-2497-0304

When going down a slope, control the speed with the steering levers and the speed control lever.

Figure OI-127



When going down grades that exceed 15 °, put the machine in the position shown, and run the engine slowly [Figure OI-127].

Operate as slow as possible and avoid sudden changes in lever direction.

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

Stop the machine before moving the upper equipment controls. Never allow the blade to strike a solid object. Damage to the blade or hydraulic cylinder can result.

WARNING

AVOID INJURY OR DEATH

- Avoid steep areas or banks that could break away.
- Keep boom centered and attachments as low as possible when traveling on slopes or in rough conditions. Look in the direction of travel.
- Always fasten seat belt.

W-2498-0304

Figure OI-128

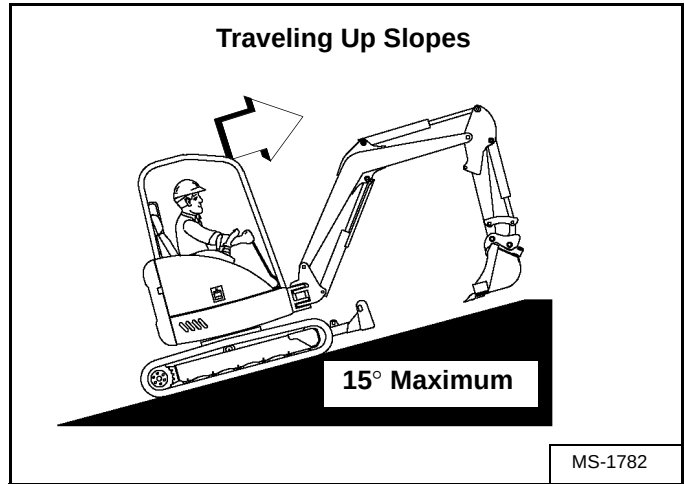
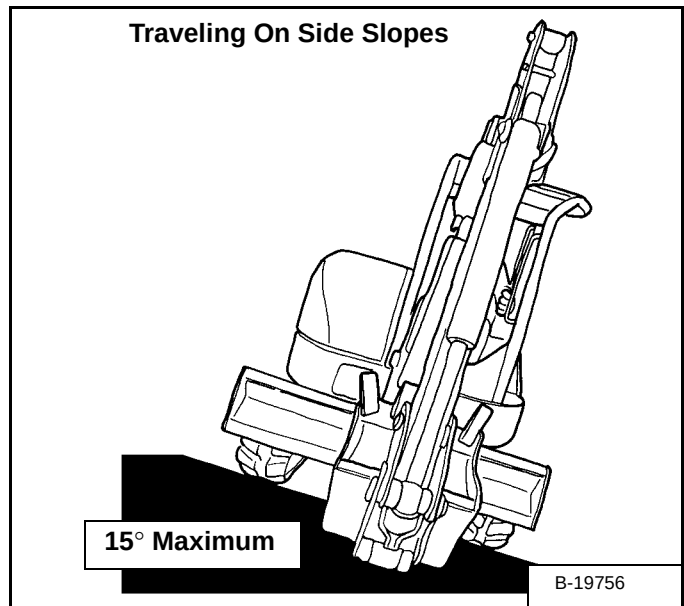


Figure OI-129



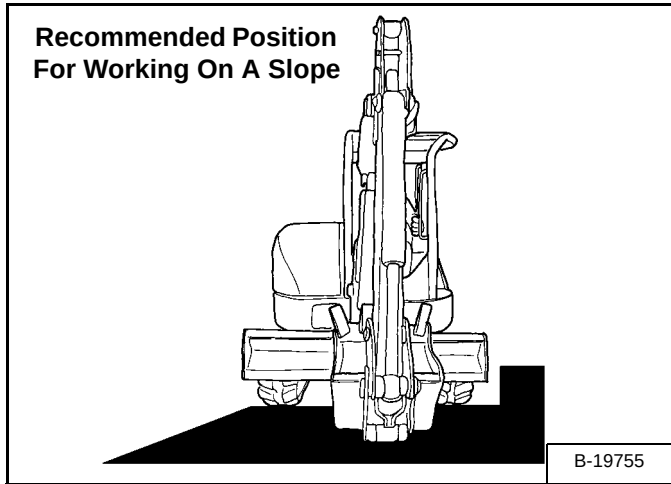
When traveling up slopes or on side slopes that are 15 degrees or less, position the machine as shown and run the engine slow [Figure OI-128] and [Figure OI-129].

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OPERATING PROCEDURE (CONT'D)

Operating On Slopes (Cont'd)

Figure OI-130



When operating on a slope, level the work area before beginning [Figure OI-130].

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

Do not work on slopes which are over 15 °.

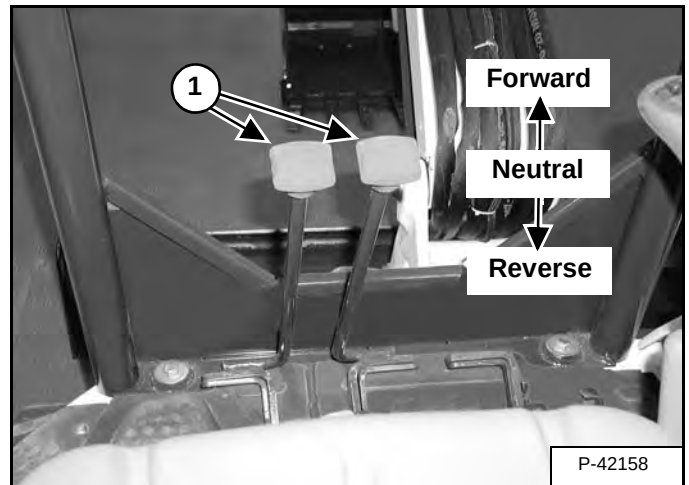
Use a slow work cycle.

Avoid working with the tracks across the slope. This will reduce stability and increase the tendency for the machine to slide. Position the excavator with the blade downhill and lowered.

Avoid swinging or extending the bucket more 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.

Figure OI-131



To brake the machine when going down a slope, move the steering levers (Item 1) [Figure OI-131] 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 to the ground.

NOTE: If the engine stops, the boom/bucket (attachments) can be lowered to the ground using hydraulic pressure which is stored in the accumulator.

The console must be in the locked down position, and the key switch in the ON position.

Use the control lever to lower the boom.

Start the engine and resume operation.

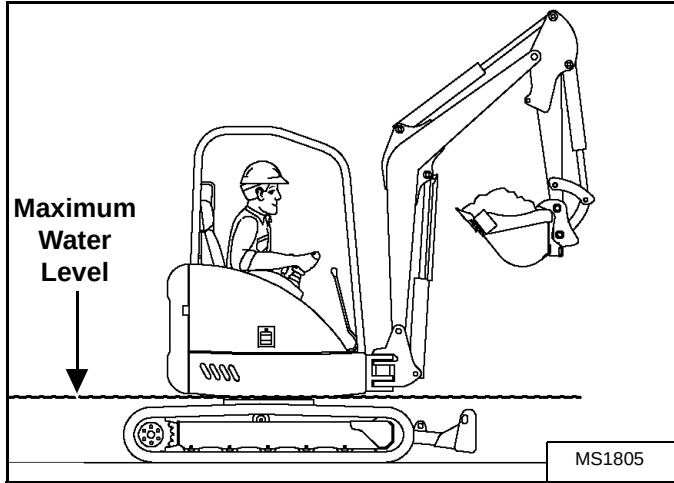
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OPERATING PROCEDURE (CONT'D)

Operating In Water

Mud and water should be removed from the machine before parking. In freezing temperatures, park the machine on boards or concrete to prevent the track or undercarriage from freezing to the ground and preventing machine movement.

Figure OI-132



Do not operate or immerse the excavator in water higher than the bottom of the swing circle **[Figure OI-132]**.

Grease the excavator when it has been operated or immersed in water for a period of time. Greasing forces the water out of the lubrication areas.

Water must be removed from the cylinder rods. If water freezes to the cylinder rod, the cylinder seals can be damaged when the rod is retracted.

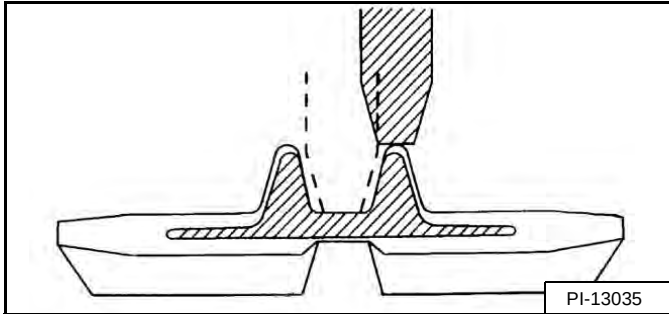
OPERATING PROCEDURE (CONT'D)

Avoiding Track Damage

Mud and water should be removed from the machine before parking. In freezing temperatures, park the machine on boards or concrete to prevent the track or undercarriage from freezing to the ground and preventing machine movement.

Some cause of track damage:

Figure OI-133

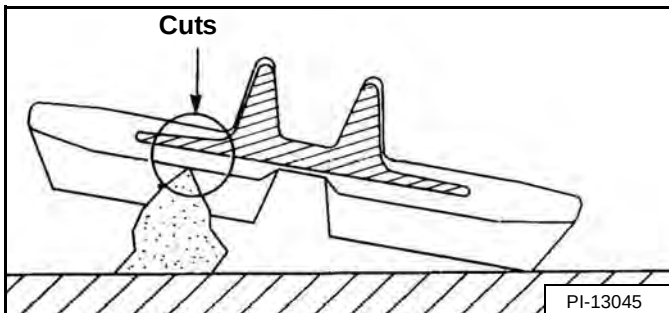


Incorrect track tension: When the rubber track is detracting, the idler or sprocket rides on the projections of the embedded metal **[Figure OI-133]** causing the embedded metal to be exposed to corrosion. (See TRACK TENSION on Page OI-31.)

If rubber track is clogged with stones or foreign objects, these can get wedged between the sprocket / rollers and cause detracting and track stress.

When moisture invades through cuts on the track, the embedded steel cords will corrode. The deterioration of the design strength may lead to the breaking of the steel cords.

Figure OI-134

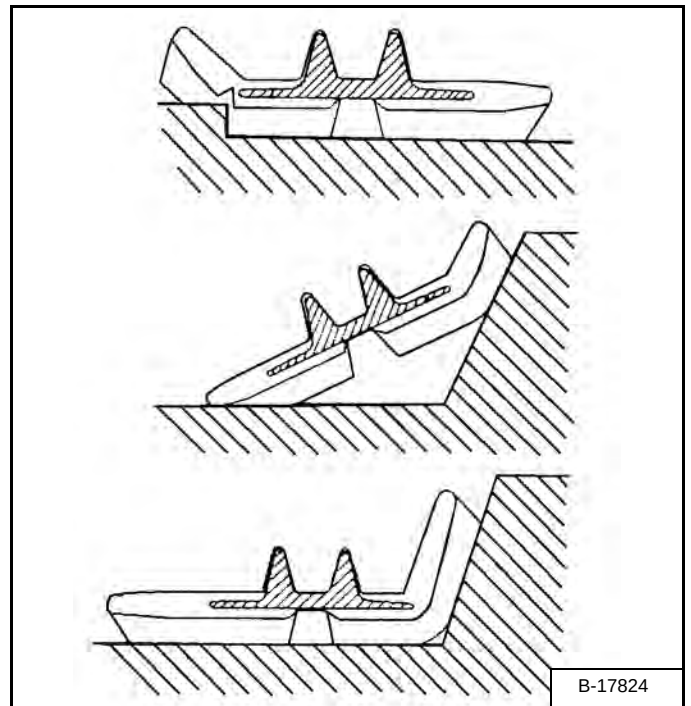


When rubber tracks drive over projections or sharp objects in the field, the concentrated forces applied cause cuts on the lug side rubber surface **[Figure OI-134]**. In case of making turns on projections, the lug side rubber surface will have an even higher chance to be cut. If the cuts run through the embedded steel cords, it might result in the steel cords' breakage due to their corrosion.

Avoid quick turns on bumpy and rocky fields.

Driving over sharp objects should be avoided. If this is impossible, do not make turns while driving over sharp objects.

Figure OI-135



When rubber tracks drive over sharp projections, intensive stress is applied to the lug side rubber surface, especially at the edges of embedded metals, causing cracks and cuts in the area around the embedded metals **[Figure OI-135]**.

Avoid extensive stress applied to the lug root where metals are embedded. Operators should try to avoid driving over stumps and ridges.

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TOWING THE EXCAVATOR

Procedure

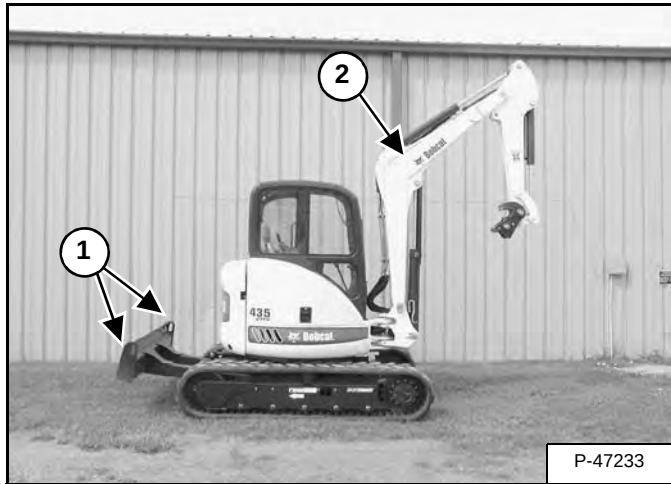
There is not a recommended towing procedure for the excavators.

- The excavator can be lifted onto the transport vehicle.
- The excavator can be skidded a short distance move for service (EXAMPLE: Move onto a transport vehicle) without damage to the hydraulic system. (The tracks will not turn.) There might be slight wear to the tracks when the excavator is skidded.
- The towing chain (or cable) must be rated at 1 & 1/2 times the weight of the excavator. See "Performance (S/N AACD11001 & Above), (AA8A11001 & Above)" on Page OI-6.

LIFTING THE EXCAVATOR

Procedure

Figure OI-136



Fully extend the cylinders of the bucket, arm, and boom so that the excavator is in the position as shown [Figure OI-136].

Raise the blade all the way.

Put all the control levers in neutral.

NOTE: For machines equipped with angle blade, make sure blade is in the straight position prior to lifting.

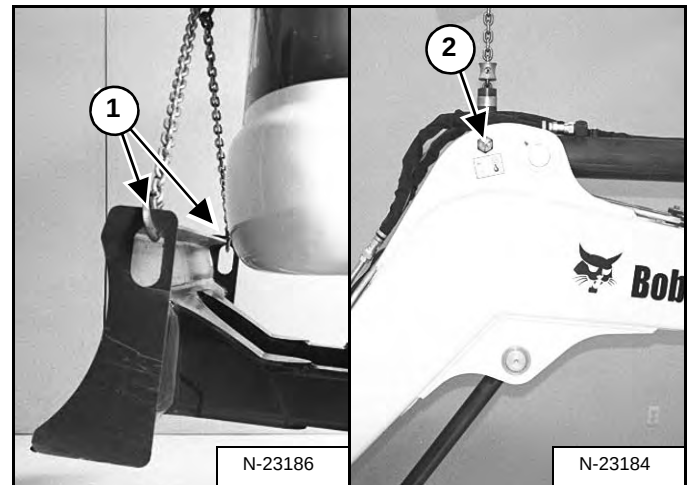
WARNING

AVOID INJURY OR DEATH

- Use chains and lifting equipment 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.
- Never lift with the blade angled (if equipped).

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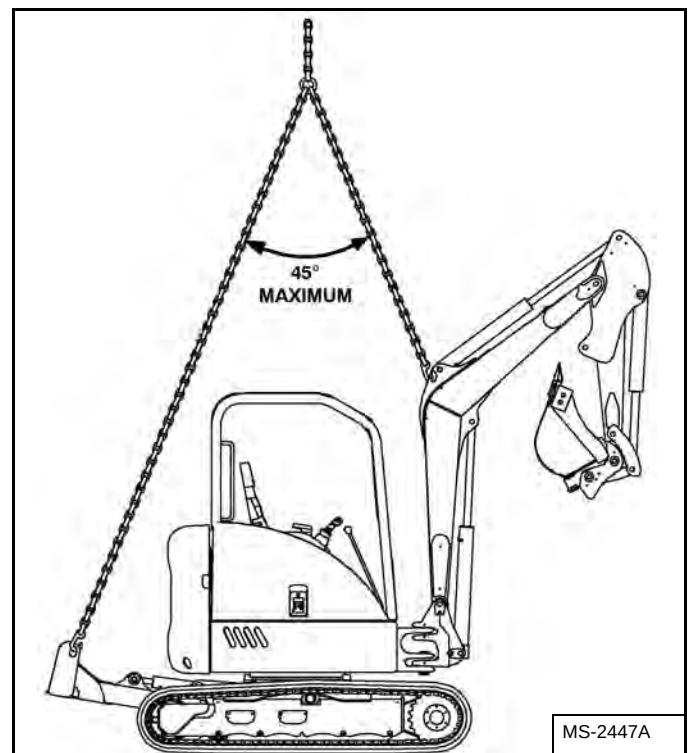
Figure OI-137



Fasten chains to the ends of the blade (Item 1) [Figure OI-136] and [Figure OI-137] and up to a lifting device above the canopy/cab. Place protective material between the chains and the ROPS / tailgate to prevent damage.

Install a one inch (25 mm) bolt and nut (Grade 5 or 8) through the holes at the boom (Item 2) [Figure OI-136] and [Figure OI-137]. Fasten a chain from the bolt to the lift device.

Figure OI-138



The maximum angle between the front and rear chains must not exceed 45° [Figure OI-138].

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

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

Figure OI-139



Move the machine forward onto the transport vehicle [Figure OI-139].

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.

Fastening

Figure OI-140

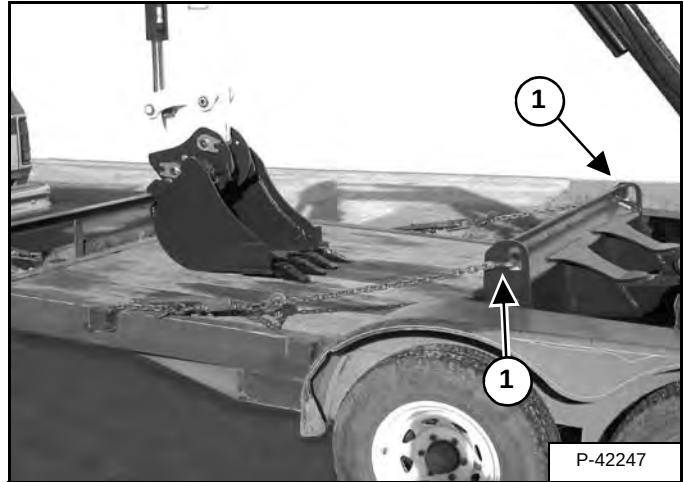
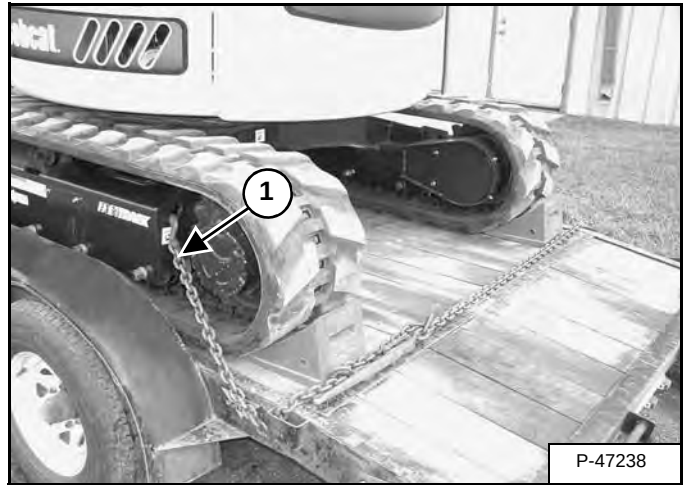


Figure OI-141



Fasten chains to the front corners of the blade (Item 1) [Figure OI-140] and to the tie down loop at the rear of the track frame (Item 1) [Figure OI-141] to prevent it from moving when going up or down slopes or during sudden stops.

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

WARNING

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

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PREVENTIVE MAINTENANCE

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MAINTENANCE SAFETY



WARNING

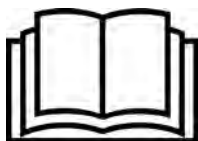
Instructions are necessary before operating or servicing machine. Read and understand the Operation & Maintenance Manual, Operator's Handbook and signs (decals) on machine. Follow warnings and instructions in the manuals when making repairs, adjustments or servicing. Check for correct function after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

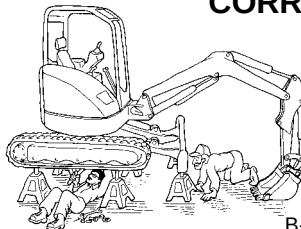
CORRECT



P-90216

- ⚠ Never service the Bobcat Compact Excavator without instructions.

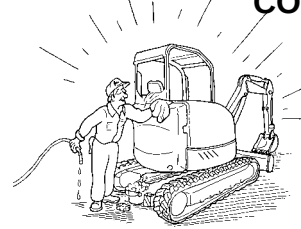
CORRECT



B-19781

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

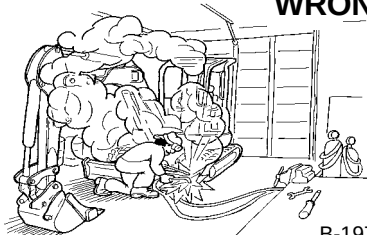
CORRECT



B-19782

- ⚠ Cleaning and maintenance are required daily.

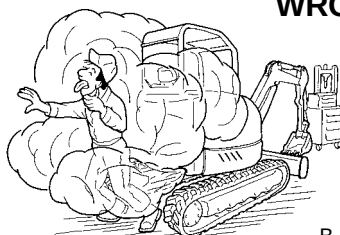
WRONG



B-19790

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

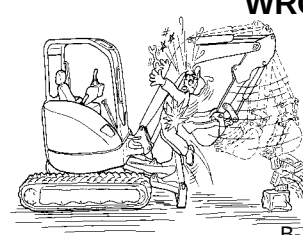
WRONG



B-19791

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

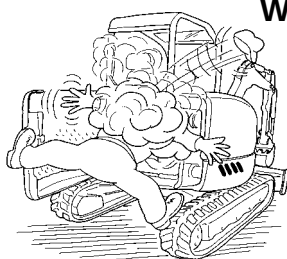
WRONG



B-19789

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

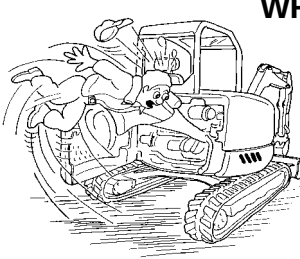
WRONG



B-19788

- ⚠ 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-19787

- ⚠ 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.

MSW27-0409

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Bobcat®

SERVICE SCHEDULE

Chart

Maintenance work must be done at regular intervals. Failure to do so will result in excessive wear and early failures. The service schedule is a guide for correct maintenance of the Bobcat Excavator.



WARNING

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

W-2003-0903

SERVICE SCHEDULE		HOURS					
ITEM	SERVICE REQUIRED	8-10	50	100	250	500	1000
Engine Coolant	Check coolant level. Add premixed coolant as needed.						
Engine Oil	Check the engine oil level and add as needed.						
Hydraulic Fluid, Hoses and Tubelines, Reservoir Breather Cap	Check the hydraulic fluid level and add as needed. Check for damage and leaks. Repair or replace as needed.						
Engine Air Filter and Air System	Check condition indicator and empty dust cup as needed. Check air system for leaks.						
Tracks	Check and adjust track tension as needed.						
Indicators and Lights	Check for correct operation of all indicators and lights.						
Operator Canopy/Cab	Check condition. Check mounting hardware.						
Seat Belt	Check condition. Check mounting hardware.						
Safety Signs and Safety Treads	Check for damaged signs (decals) and safety treads. Replace any signs or safety treads that are damaged or worn.						
Pivot Points	Grease all machinery pivot points.						
Cab Heater Air Filter	Clean the filter as needed.						
Console Lockout	Check console lockout for proper operation.						
X-Change	Lubricate and inspect for damage or loose parts.						
Swing Circle and Pinion	Grease two fittings.						
Fuel Tank & Filter	Drain water and sediment from fuel tank and fuel filter.						
Battery	Check battery, cables, connections and electrolyte level. Add distilled water as needed.						
Spark Arrestor Muffler	Clean the spark chamber.						
Fuel Filters	Replace fuel filter.						
Inline Fuel Filter	Replace inline fuel filter.						
Accessory Drive Belt	Check condition of belt and adjust as needed.		●	^			
Drive Belt	Check and adjust as needed.			^			
Radiator, Oil Cooler, *A/C	Clean debris from the radiator fins.						
Engine Oil and Filter	Replace oil and filter use CD or better grade oil and Bobcat filter.		▼				
Primary Hydraulic Filter	Replace the primary hydraulic filter.			^			
Case Drain Filter	Replace the case drain filter.			^			
Fan Hydraulic Filter	Replace the fan hydraulic filter.			^			
Alternator & Starter	Check the alternator and starter connections.			^			
Engine Valves	Check and adjust the engine valve clearance.						
Hydraulic System	Replace the hydraulic fluid and filters. Clean the reservoir.						
Travel Motor	Replace the lubricant in both travel motors.			^			
Coolant	Drain and flush the cooling system. Replace the coolant.						
		Every 2 years					

* If Equipped

- Check after the first 50 hours, then 100 hour intervals thereafter.
- ▼ First oil and filter change must occur at 50 hours; then 500 hour intervals thereafter.
- ^ Check after the first 100 hours, then 500 hour intervals thereafter.
- Or every 6 months.

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CONTROL CONSOLE LOCKOUTS

Inspection And Maintenance

Figure PM-1



When the left console is raised **[Figure PM-1]**, the hydraulic control levers (joysticks) and traction system must not function.

Sit in the operator's seat, fasten the seat belt and start the engine.

Raise the left console.

Move the joystick control levers. There should be no movement of the boom, arm, slew or bucket.

Move the steering control levers. There should be no movement of the excavator tracks.

Service the system if these controls do not deactivate when the left control console is raised. (See your Bobcat dealer for service.)

SEAT BELT

Inspection And Maintenance

WARNING

Failure to properly inspect and maintain the seat belt can cause lack of operator restraint resulting in serious injury or death.

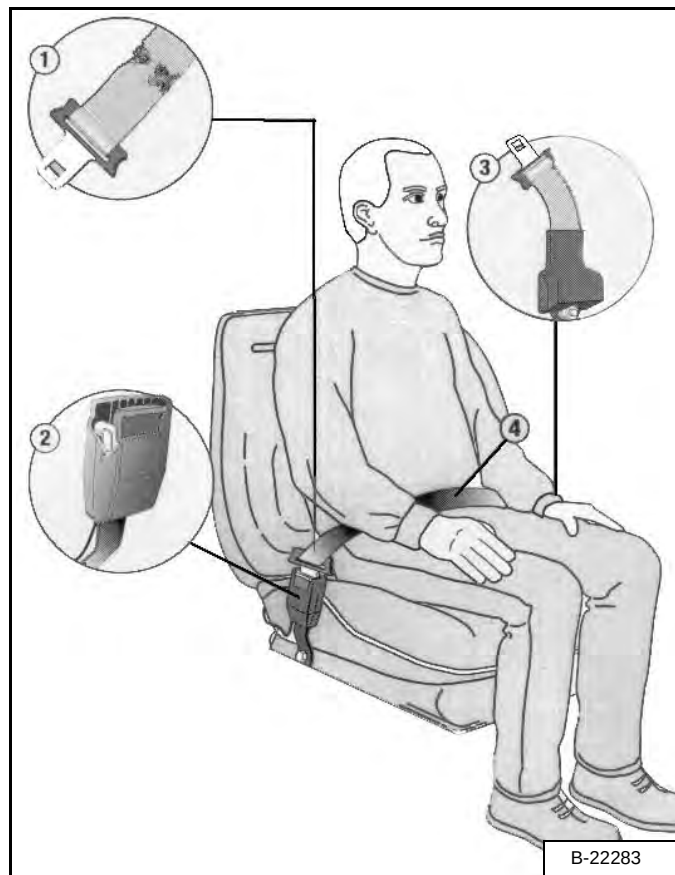
W-2466-0703

Check the seat belt daily for correct function.

Inspect the seat belt system thoroughly yearly or more often if the machine is exposed to severe environmental conditions or applications.

The seat belt system should be repaired or replaced if it shows cuts, fraying, extreme or unusual wear, significant discolorations due to ultraviolet (UV) rays from the sun, dusty/dirty conditions, abrasion to the seat belt webbing, or damage to the buckle, latch plate, retractor (if equipped), or hardware.

Figure PM-2



The items below are referenced in [Figure PM-2].

1. Check the seat belt webbing. If the system is equipped with a retractor, pull the webbing completely out and inspect the full length of the webbing. Look for cuts, wear, fraying, dirt and stiffness.
2. Check the buckle and latch for proper function. Make sure latch plate is not excessively worn, deformed or buckle is not damaged.
3. Check the retractor web storage device (if equipped) by extending the seat belt webbing to determine if it extends and retracts the webbing correctly.
4. Check webbing in areas exposed to ultraviolet (UV) rays from the sun or extreme dust or dirt. If the original color of the webbing in these areas is extremely faded and / or the webbing is packed with dirt, the webbing strength may have weakened.

See your Bobcat dealer for approved seat belt system replacement parts for your machine.

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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

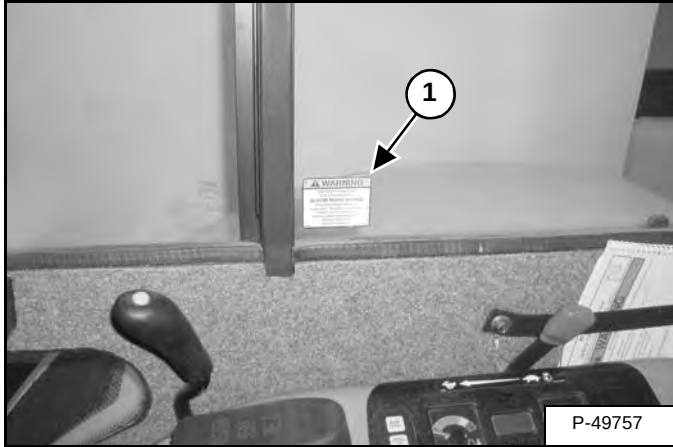
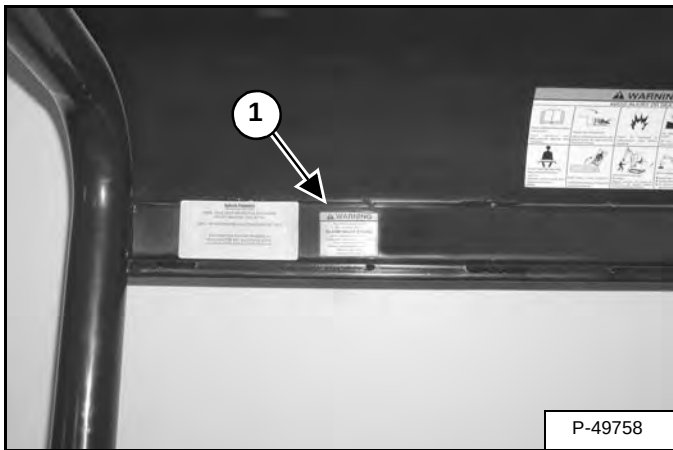


Figure PM-4



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.

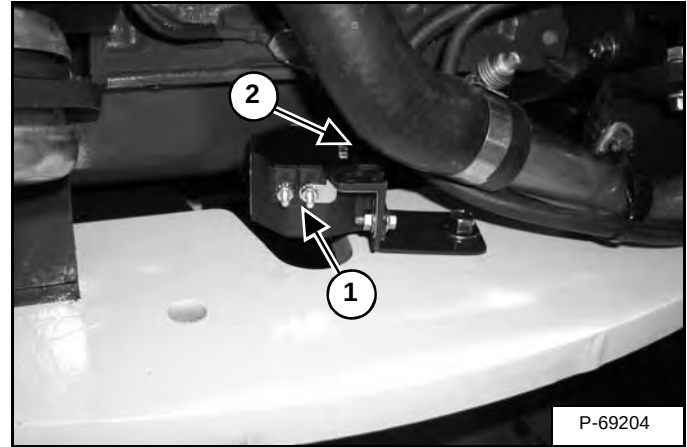
Sit in the operator's seat. Turn excavator key to ON position but do not start the engine.

Move the travel control levers in the forward direction. The motion alarm must sound. Move the travel control levers in the reverse direction. The motion alarm must sound.

Turn excavator key to OFF position.

The motion alarm is located inside the lower part of the engine compartment.

Figure PM-5



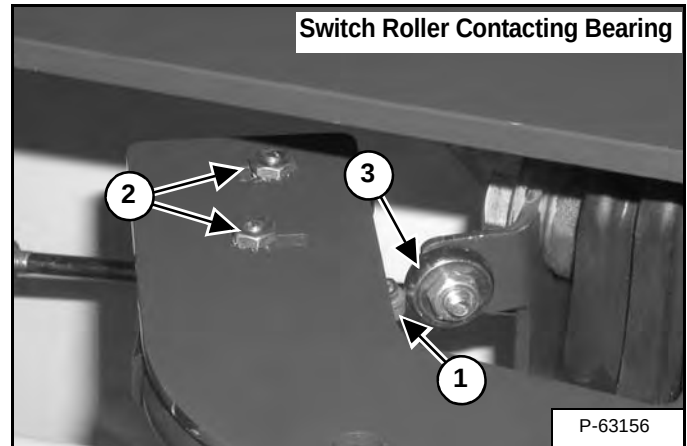
Inspect the motion alarm electrical connections (Item 1) [Figure PM-5], wire harness (Item 2) [Figure PM-5] and motion alarm switch (Item 1) [Figure PM-6] for tightness and damage. Repair or replace any damaged components.

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

Adjusting Switch Position

Stop the engine. Remove the floormat and floor plate. (See Service Manual for procedure for floormat and floor plate removal.)

Figure PM-6



Place the travel control levers in the neutral position.

Loosen the screws (Item 2) [Figure PM-6] securing the motion alarm switch.

Position the motion alarm switch roller (Item 1) so that it makes contact with bearing (Item 3) until it opens the switch circuit. (Listen for the click of the switch.) Torque the screws (Item 2) [Figure PM-6] securing the switch to the bracket to 14 - 19 in.-lb. (1,6 - 2,1 N•m).

Inspect the motion alarm system for proper function after adjustment.

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.

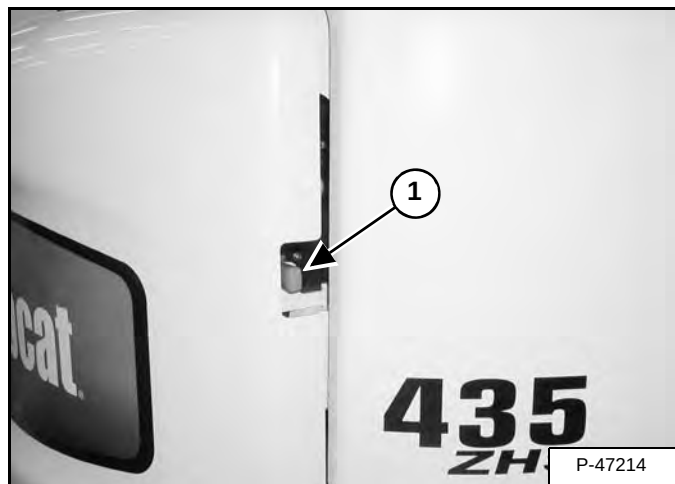
W-2012-0497

! WARNING

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

W-2020-1285

Figure PM-7

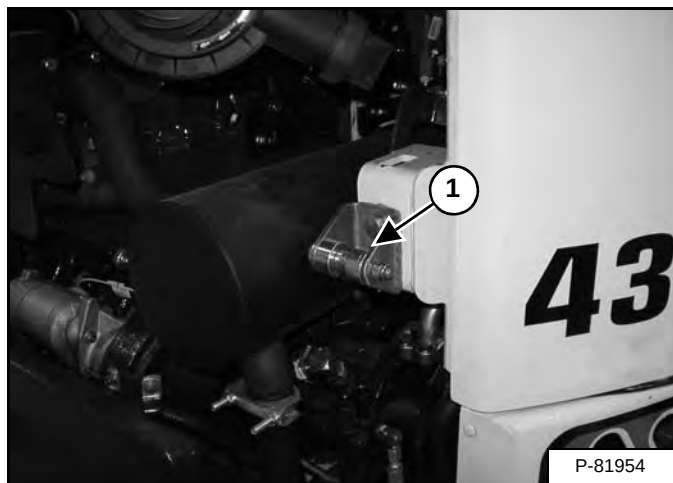


Pull the latch (Item 1) [Figure PM-7] and pull the tailgate open.

Push firmly to close the tailgate.

Adjusting The Latch

Figure PM-8



The door catch (Item 1) [Figure PM-8] can be adjusted for alignment.

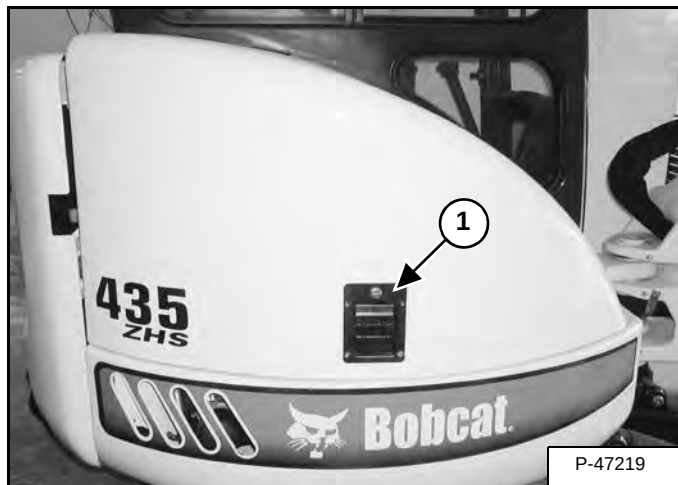
Close the tailgate before operating the excavator.

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RIGHT SIDE COVER

Opening And Closing

Figure PM-9



Pull the latch (Item 1) [Figure PM-9] and raise the right side cover.

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

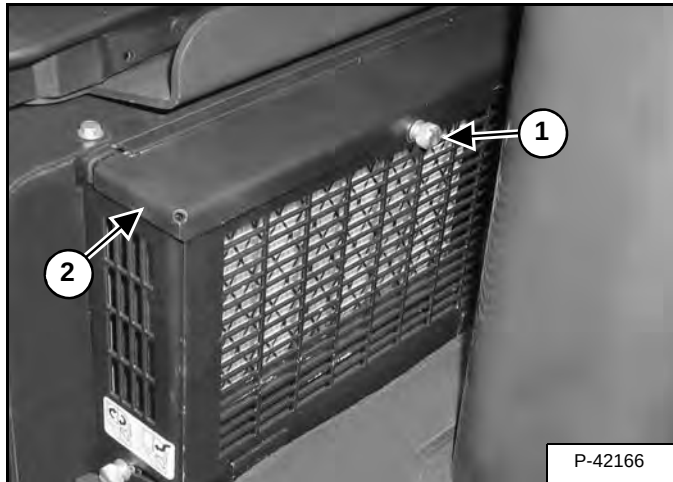
CAB FILTERS

Cleaning And Maintenance

The recirculation filter must be cleaned regularly. The filter is located at the right of the operator seat.

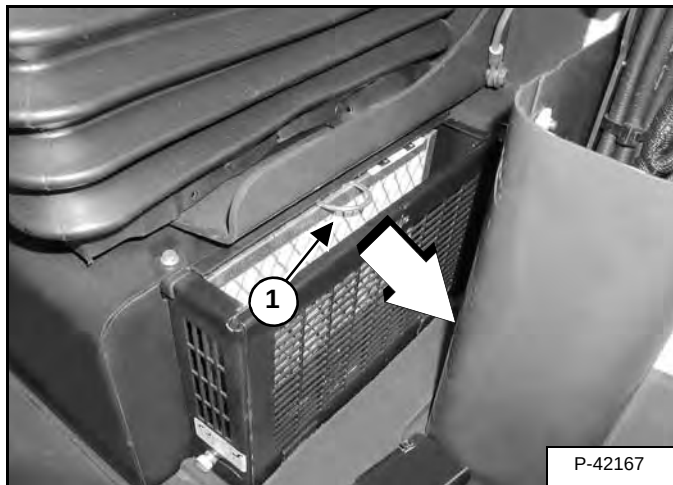
The heater filter must be cleaned regularly. The filter is located at the left of the operator seat.

Figure PM-10



Remove the screw (Item 1) and cover (Item 2) [Figure PM-10].

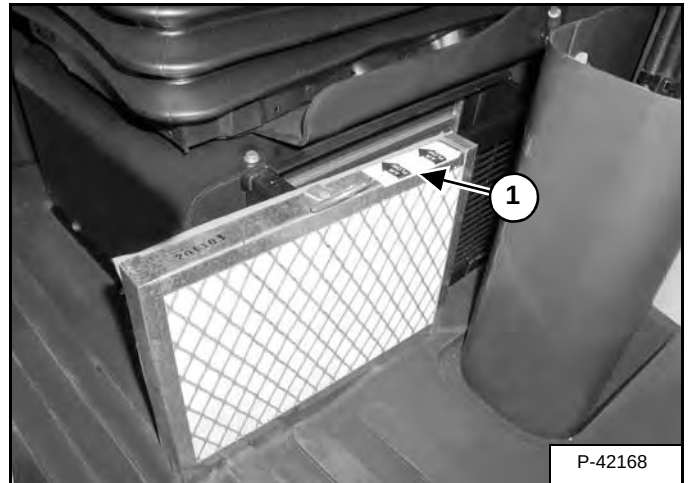
Figure PM-11



Pull the filter (Item 1) [Figure PM-11] away and out of the heater/AC housing.

Use low air pressure to clean the filter. Replace the filter when very dirty.

Figure PM-12



Installation: Install the filter with the arrows that indicate air flow direction (Item 1) [Figure PM-12] pointing towards the heater/AC housing.

The filter must be cleaned regularly.

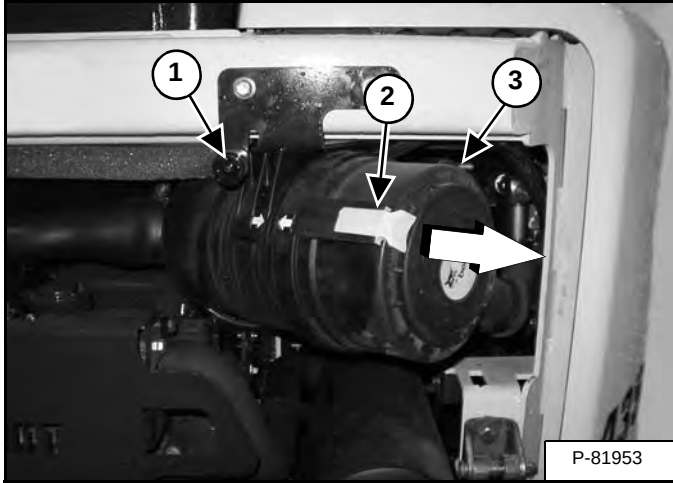
AIR CLEANER SERVICE

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

Daily Check

The air cleaner is located in the engine compartment. Open the tailgate to access the air cleaner for service. (See TAILGATE on Page PM-9.)

Figure PM-13



Check the condition indicator (Item 1) [Figure PM-13]. 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.

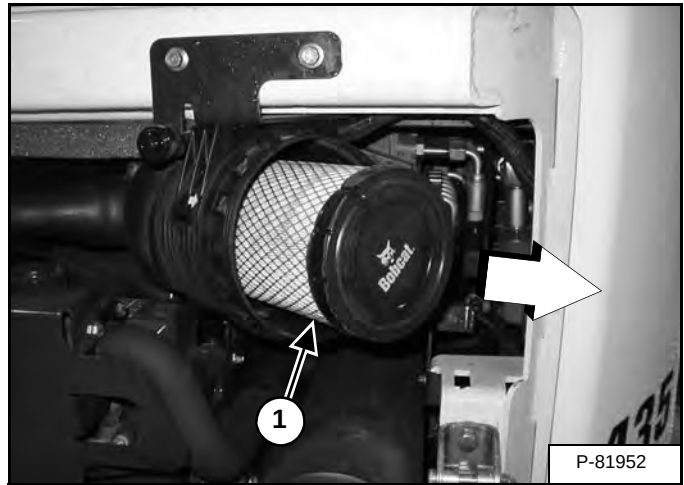
Replacing Filter Elements

Outer Filter

Pull outward on the cover retainer (Item 2) [Figure PM-13].

Rotate the dust cup (Item 3) [Figure PM-13] counterclockwise to remove. When the dust cup is removed, clean with a damp cloth.

Figure PM-14



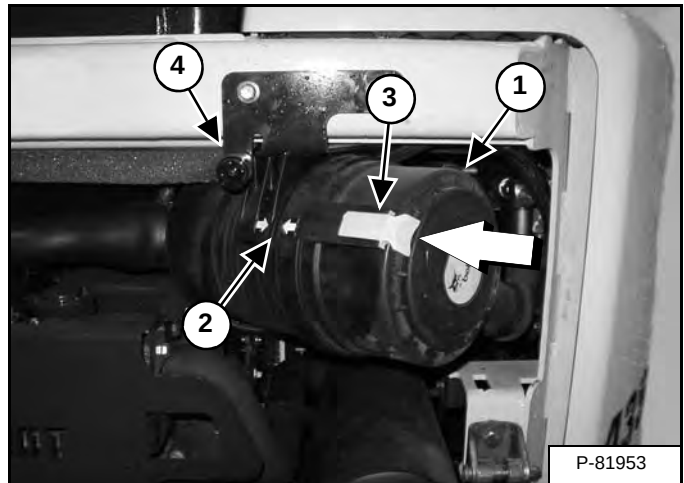
Pull the outer filter (Item 1) [Figure PM-14] from the air cleaner housing.

Check the housing for damage.

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

Install a new filter.

Figure PM-15



Install the dust cup (Item 1) and rotate the dust cup clockwise to align the arrows (Item 2) [Figure PM-15] as shown. (The arrows must be aligned to lock the cover.)

Push in on the retainer (Item 3) to lock the dust cover [Figure PM-15].

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 4) [Figure PM-15] on the end of 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.

AIR CLEANER SERVICE (CONT'D)

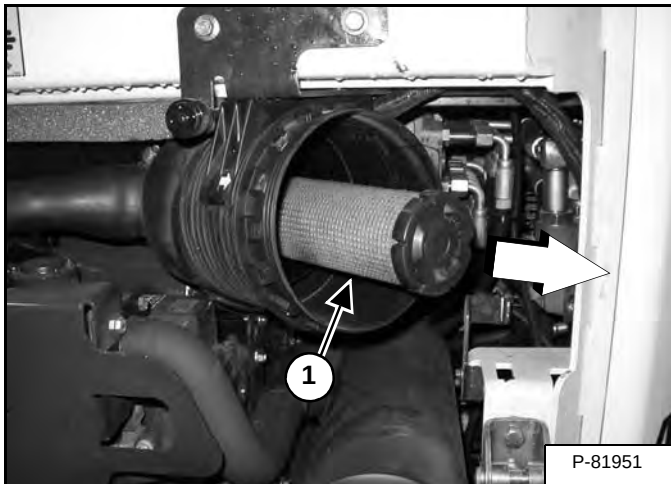
Replacing The Filters (Cont'd)

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 4) **[Figure PM-15]** on the end of 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.

Figure PM-16



Remove the dust cup, outer filter and inner filter (Item 1) **[Figure PM-16]**.

NOTE: Make sure all sealing surfaces are free of dirt and debris.

Install the new inner filter.

Install the outer filter and the dust cup.

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

FUEL SYSTEM

Fuel Specifications

Use only clean, high quality diesel fuel, Grade No. 2 or Grade No. 1 with a cetane number of 45 or higher.

The following is one suggested blending guideline which should prevent fuel gelling during cold temperatures:

TEMPERATURE F° (C°)	NO. 2	NO. 1
+15° (9°)	100%	0%
Down to -20° (-29°)	50%	50%
Below -20° (-29°)	0%	100%

At a minimum, Low Sulfur (500 ppm sulfur) Diesel Fuel must be used in this machine.

The following fuels may also be used in this machine:

- Ultra Low Sulfur (15 ppm sulfur) Diesel Fuel.
- Biodiesel Blend Fuel - Must contain no more than five percent biodiesel mixed with low sulfur or ultra low sulfur petroleum based diesel. This is commonly marketed as B5 blended diesel fuel.

**WARNING**

AVOID INJURY OR DEATH
Stop and cool the engine before adding fuel. NO SMOKING! Failure to obey warnings can cause an explosion or fire.

W-2063-0807

**WARNING**

AVOID INJURY OR DEATH
Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire.

W-2103-0508

Biodiesel Blend Fuel

Biodiesel blend fuel has unique qualities that should be considered before using in this machine:

- Cold weather conditions can lead to plugged fuel system components and hard starting.
- Biodiesel blend fuel is an excellent medium for microbial growth and contamination which can cause corrosion and plugging of fuel system components.
- Use of biodiesel blend fuel may result in premature failure of fuel system components, such as plugged fuel filters and deteriorated fuel lines.
- Shorter maintenance intervals may be required, such as cleaning the fuel system and replacing fuel filters and fuel lines.
- Using biodiesel blended fuels containing more than five percent biodiesel can affect engine life and cause deterioration of hoses, tubelines, injectors, injector pump and seals.

Apply the following guidelines if biodiesel blend fuel is used:

- Ensure the fuel tank is as full as possible at all times to prevent moisture from collecting in the fuel tank.
- Ensure that the fuel tank cap is securely tightened.
- Biodiesel blend fuel can damage painted surfaces, remove all spilled fuel from painted surfaces immediately.
- Drain all water from the fuel filter daily before operating the machine.
- Do not exceed engine oil change interval. Extended oil change intervals can cause engine damage.
- Before vehicle storage; drain the fuel tank, refill with 100% petroleum diesel fuel, add fuel stabilizer and run the engine for at least 30 minutes.

NOTE: Biodiesel blend fuel does not have long term stability and should not be stored for more than three months.

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FUEL SYSTEM (CONT'D)

Filling The Fuel Tank

Figure PM-17



Remove the fuel fill cap (Item 1) [Figure PM-17].

Use a clean, approved safety container to add fuel. Add fuel only in an area that has a free movement of air and no flames or sparks. **NO SMOKING!**

Install and tighten the fuel fill cap.

Clean up any spilled fuel.

See the SERVICE SCHEDULE for the service interval when to remove water from or replace the fuel filter. (See SERVICE SCHEDULE on Page PM-5.)

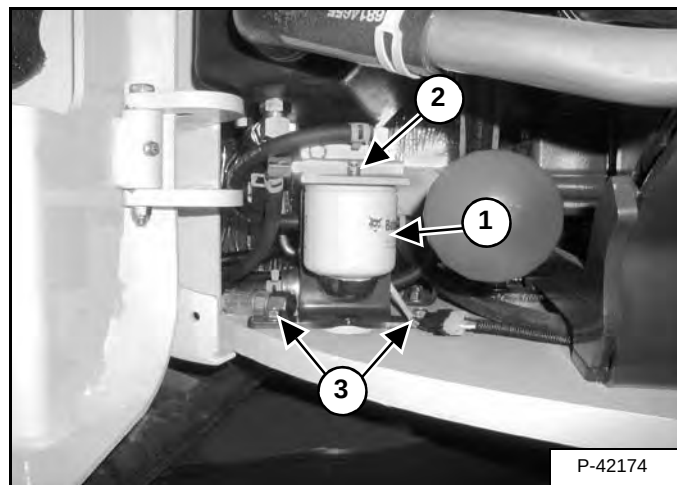
NOTE: The fuel cap can be locked using the start key.

Fuel Filters

Removing Water

Open the tailgate.

Figure PM-18



Loosen the drain (Item 1) [Figure PM-18] at the bottom of the filter to drain water from the filter.

Clean up any spilled fuel.

See the SERVICE SCHEDULE for the service interval when to remove the water from the fuel filter. (See SERVICE SCHEDULE on Page PM-5.)

Replacing Elements

Remove the filter (Item 2) [Figure PM-18].

Clean the area around the filter housing. Put clean oil on the seal of the new filter. Install the fuel filter and hand tighten.

Remove the air from the fuel system. (See Removing Air From The Fuel System on Page PM-16.)

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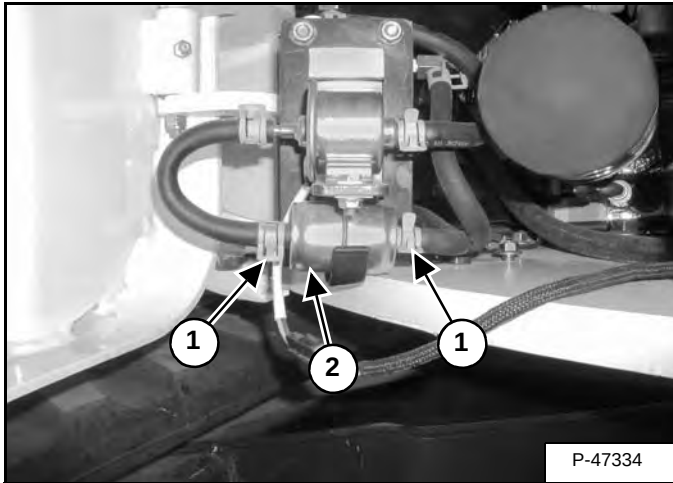
FUEL SYSTEM (CONT'D)

Inline Fuel Filter

See SERVICE SCHEDULE for the service interval when to replace the fuel filter. (See SERVICE SCHEDULE on Page PM-5.)

Loosen the two bolts (Item 3) [Figure PM-18] and position the spin on filter to the side.

Figure PM-19

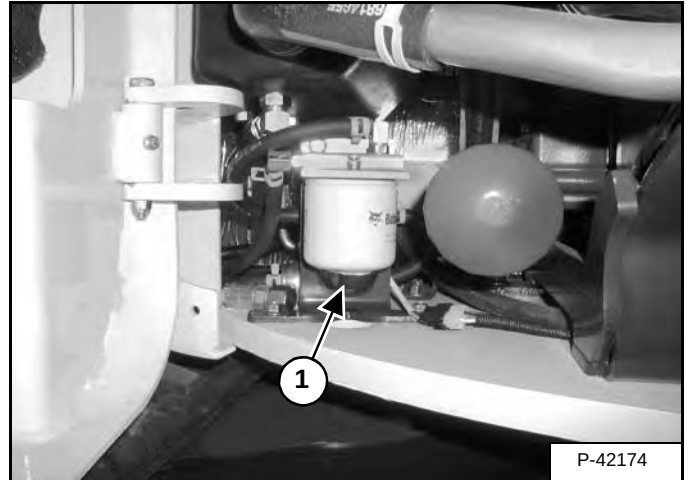


Remove the two clamps (Item 1) and remove the filter (Item 2) [Figure PM-19].

The excavator fuel system is a self bleed system and is purged of air every time the start key is turned to the run position.

Draining The Fuel Tank

Figure PM-20



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

Remove the hose (Item 1) [Figure PM-20] from the fuel injection pump. Route the hose to the bottom of the engine compartment and out the tailgate.

Turn the start key to the ON position.

Drain the fuel into a container.

Turn the start key to the OFF position.

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

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.

W-2072-0807

Removing Air From The Fuel System

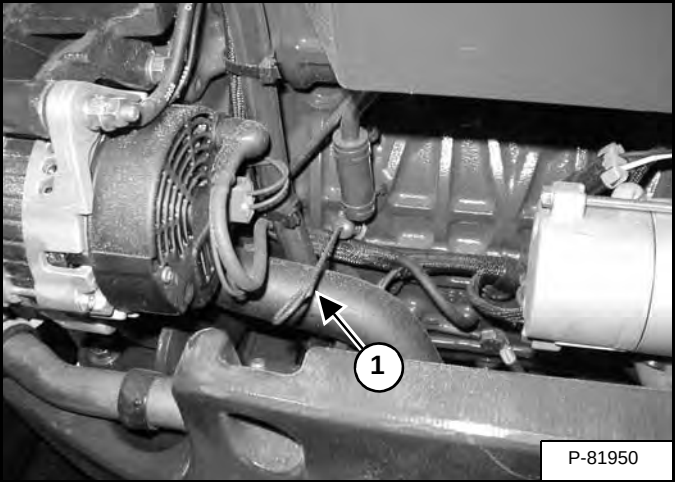
The excavator fuel system is a self bleed system and is purged of air every time the start key is turned to the run position.

ENGINE LUBRICATION SYSTEM

Checking And Adding Engine Oil

Check the engine oil after every 8-10 hours of operation and before starting the engine.

Figure PM-21



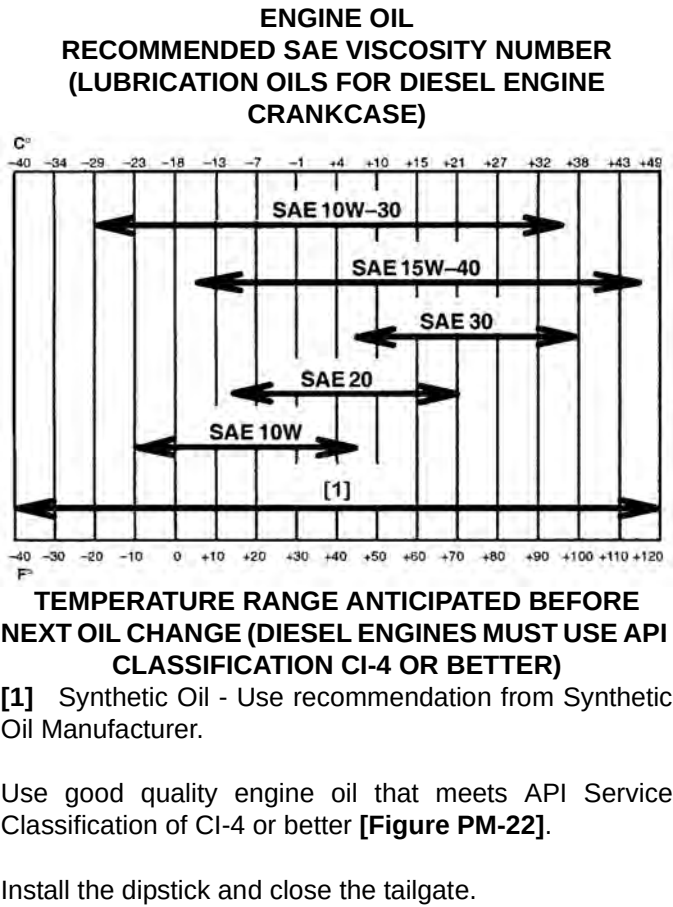
Open the tailgate and remove the dipstick (Item 1) [Figure PM-21].

Keep the oil level between the marks on the dipstick.

Use a good quality motor oil that meets the correct API Service Classification. (See REGULAR MAINTENANCE ITEMS on Page V.)

Engine Oil Chart

Figure PM-22



Dealer Copy -- Not for Resale

ENGINE LUBRICATION SYSTEM (CONT'D)

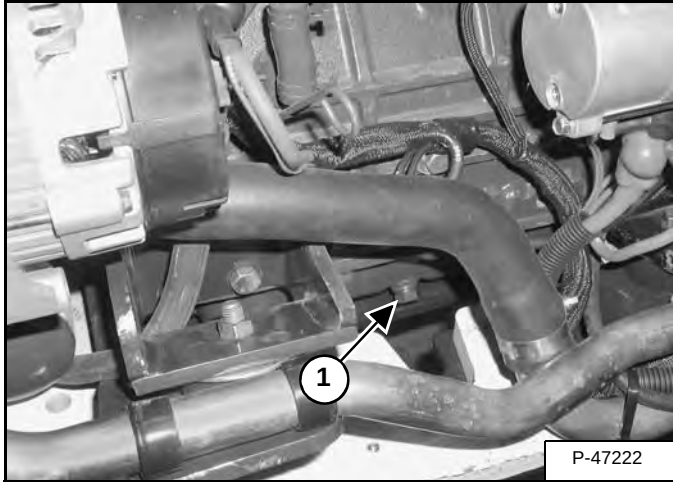
Removing And Replacing Oil Filter

See the SERVICE SCHEDULE for the service interval for replacing the engine oil and filter. (See SERVICE SCHEDULE on Page PM-5.)

Run the engine until it is at operating temperature. Stop the engine.

Open the tailgate.

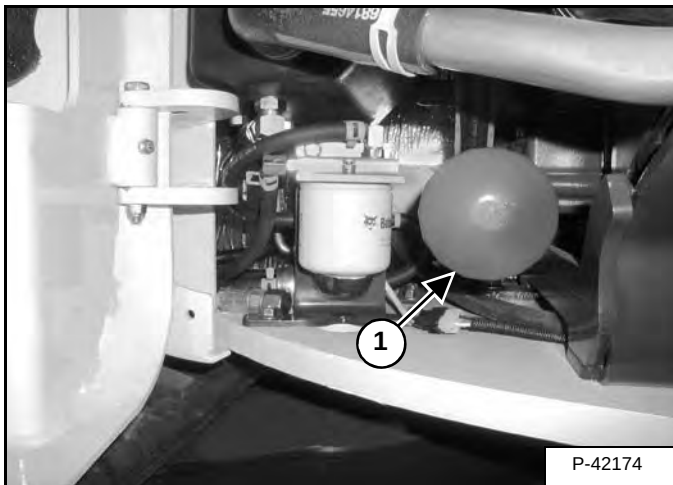
Figure PM-23



Remove the plug (Item 1) [Figure PM-23]. Drain the oil into a container.

Recycle or dispose of used oil in an environmentally safe manner.

Figure PM-24



Remove the oil filter (Item 1) [Figure PM-24] and clean the filter housing surface.

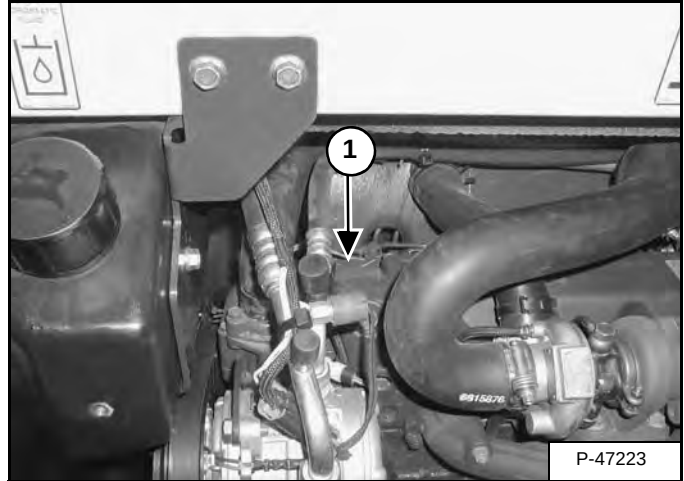
Recycle or dispose of used oil in an environmentally safe manner.

Use a genuine Bobcat replacement filter.

Put clean oil on the filter gasket. Install the filter and hand tighten.

Install and tighten the oil plug.

Figure PM-25



Remove the fill cap (Item 1) [Figure PM-25].

Put oil in the engine. (See REGULAR MAINTENANCE ITEMS on Page V.) (See Capacities on Page SPEC-9.)

Install the fill cap.

Start the engine and let it run for several minutes.

Stop the engine. Check for leaks at the oil filter. Check the oil level.

Add oil as needed if it is not at the top mark on the dipstick.

ENGINE COOLING SYSTEM

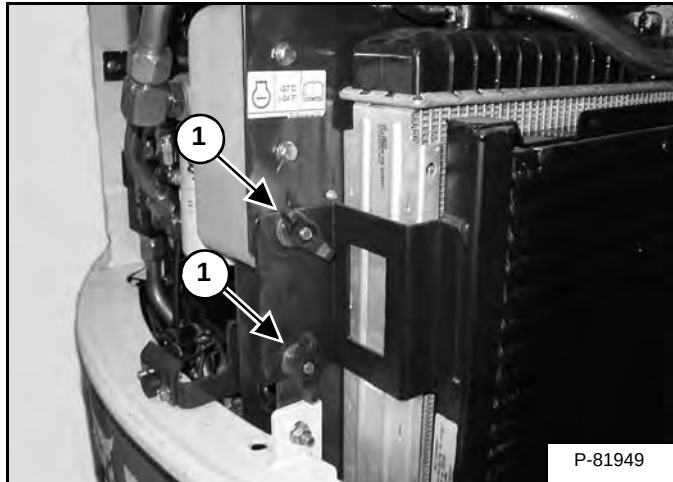
Check the cooling system every day to prevent overheating, loss of performance or engine damage.

Cleaning

NOTE: Allow the cooling system and engine to cool before servicing or cleaning the cooling system.

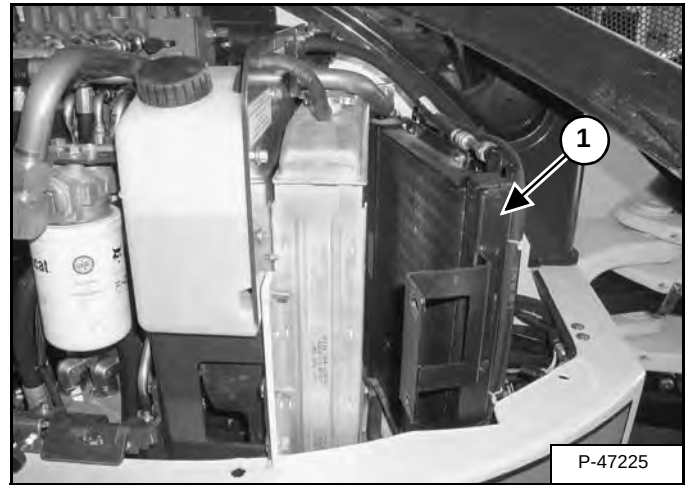
Open the right side cover.

Figure PM-26



Remove the two wing nuts (Item 1) [Figure PM-26].

Figure PM-27



Pivot the oil cooler (Item 1) [Figure PM-27] away from the radiator.

Use air pressure or water pressure to clean the radiator and oil cooler. Be careful not to damage fins when cleaning.

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ENGINE COOLING SYSTEM (CONT'D)

Checking Level

**WARNING**

AVOID BURNS

Do not remove radiator cap when the engine is hot. You can be seriously burned.

W-2070-1203

**WARNING**

AVOID INJURY OR DEATH

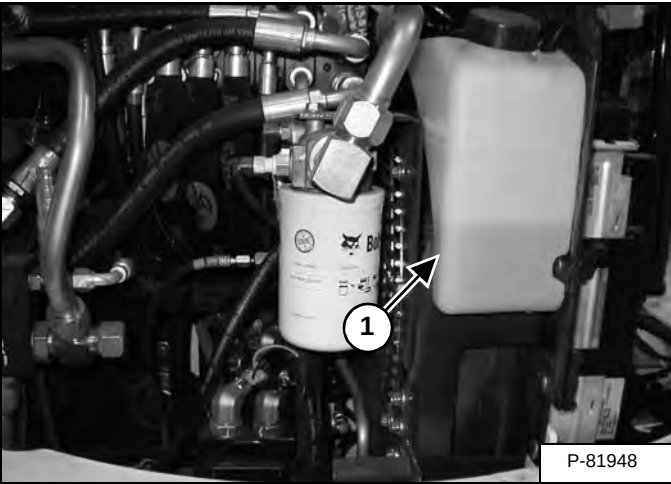
Wear safety glasses to prevent eye injury when any of the following conditions exist:

- When fluids are under pressure.
- Flying debris or loose material is present.
- Engine is running.
- Tools are being used.

W-2019-0907

Open the right side cover.

Figure PM-28



Check the coolant level in the coolant recovery tank (Item 1) [Figure PM-28].

The coolant level must be between the MIN and MAX marks on the coolant recovery tank when the engine is cold.

NOTE: The cooling system is factory filled with propylene glycol (purple color). DO NOT mix propylene glycol with ethylene glycol.

IMPORTANT

AVOID ENGINE DAMAGE

Always use the correct ratio of water to antifreeze.

Too much antifreeze reduces cooling system efficiency and may cause serious premature engine damage.

Too little antifreeze reduces the additives which protect the internal engine components; reduces the boiling point and freeze protection of the system.

Always add a premixed solution. Adding full strength concentrated coolant can cause serious premature engine damage.

I-2124-0497

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ENGINE COOLING SYSTEM (CONT'D)

Removing And Replacing Coolant

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

Stop the engine. Open the tailgate



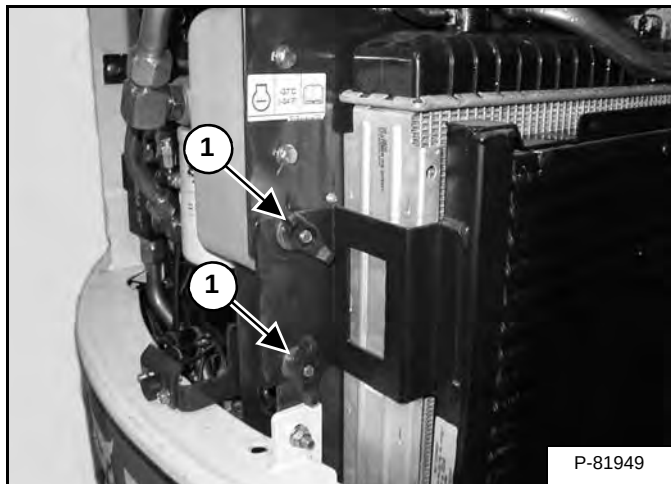
WARNING

AVOID BURNS

Do not remove radiator cap when the engine is hot. You can be seriously burned.

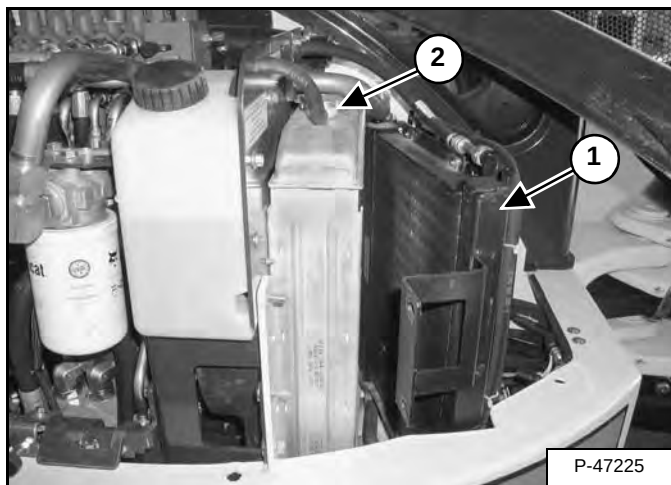
W-2070-1203

Figure PM-29



Remove the two wing nuts (Item 1) [Figure PM-29].

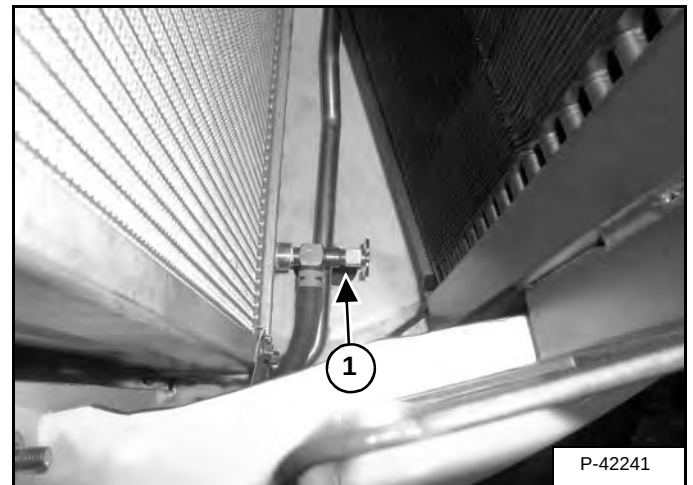
Figure PM-30



Pivot the oil cooler (Item 1) [Figure PM-30] away from the radiator.

When the engine is cool, loosen and remove the radiator cap (Item 2) [Figure PM-30].

Figure PM-31



Put a hose on the drain valve at the bottom of the radiator. Open the drain valve (Item 1) [Figure PM-31] and drain the coolant into a container.

After all the coolant is removed, close the drain valve.

Recycle or dispose of the used coolant in an environmentally safe manner.

Mix the coolant in a separate container for correct capacity. (See Capacities on Page SPEC-9.)

NOTE: The cooling system is factory filled with propylene glycol (purple color). DO NOT mix propylene glycol with ethylene glycol.

Add premixed coolant; 47% water and 53% propylene glycol to the recovery tank if the coolant level is low.

One gallon and one pint of propylene glycol mixed with one gallon of water is the correct mixture of coolant to provide a -34°F (-37°C) freeze protection.

Use a refractometer to check the condition of propylene glycol in your cooling system.

Add premixed coolant until the level is correct.

Run the engine until it is at operating temperature. Stop the engine. Check the coolant level and add as needed. Be sure the radiator cap is tight.

Add coolant to the recovery tank as needed.

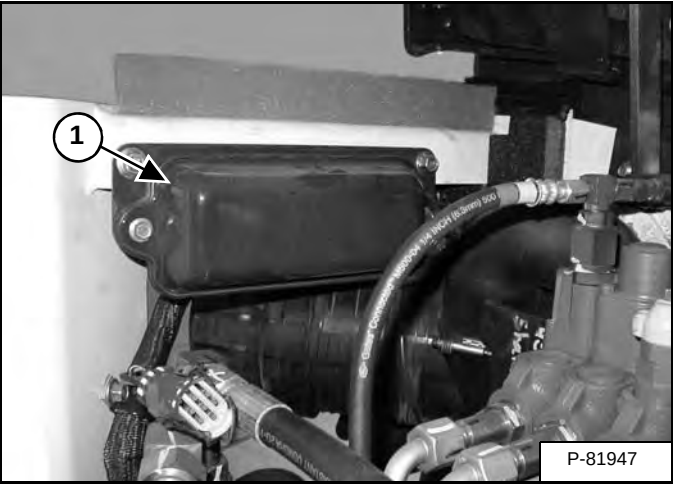
Close the right side cover.

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ELECTRICAL SYSTEM

Description

Figure PM-32



The excavator has a 12 volt, negative ground electrical system. The electrical system is protected by fuses located under the right side cover of the excavator (Item 1) [Figure PM-32]. 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.

The battery cables must be clean and tight. Check the electrolyte level in the battery. Add distilled water as needed. Remove acid or corrosion from the battery and cables with a sodium bicarbonate and water solution.

Put Battery Saver P/N 6664458 or grease on the battery terminals and cable ends to prevent corrosion.

**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.

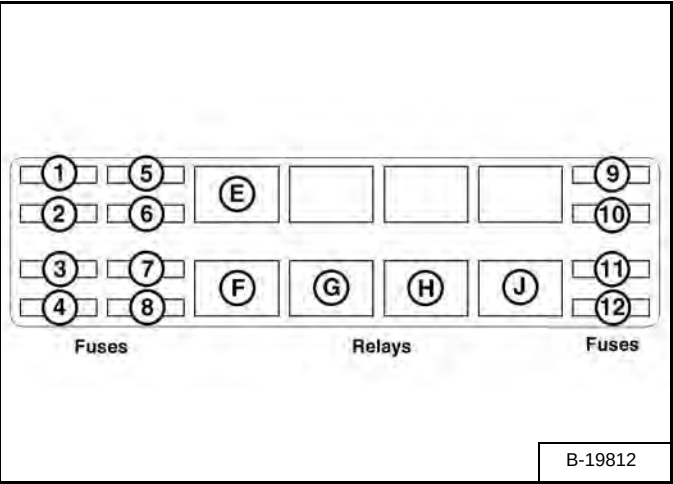
W-2065-0807

Fuse And Relay Location/Identification

A decal is inside the cover to show location and amp ratings.

Remove the cover to check or replace the fuses and relays.

Figure PM-33



The location and sizes are shown below and [Figure PM-33].

REF	DESCRIPTION	AMP	REF	DESCRIPTION	AMP
1	Not Used	- -	11	Lights	20
2	Heater	25	12	ACC Plug	15
3	Ignition	5			
4	Fuel Solenoid	25			
5	Wiper	10			
6	Switch Power	20			
7	Alternator/ Heater	25			
8	ACD	25			
9	Controller	25			
10	ACD	25			

Always replace fuses using the same type and capacity.

REF	DESCRIPTION
E	Switch Power
F	Fuel Solenoid
G	Lights
H	Glow Plug
J	Starter

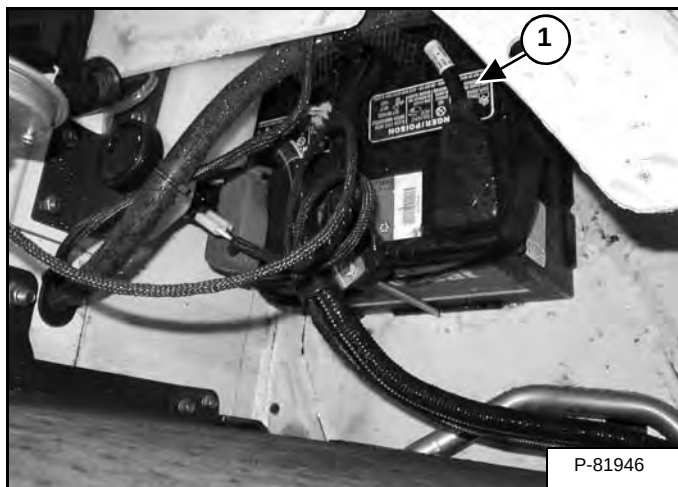
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ELECTRICAL SYSTEM (CONT'D)

Battery Maintenance

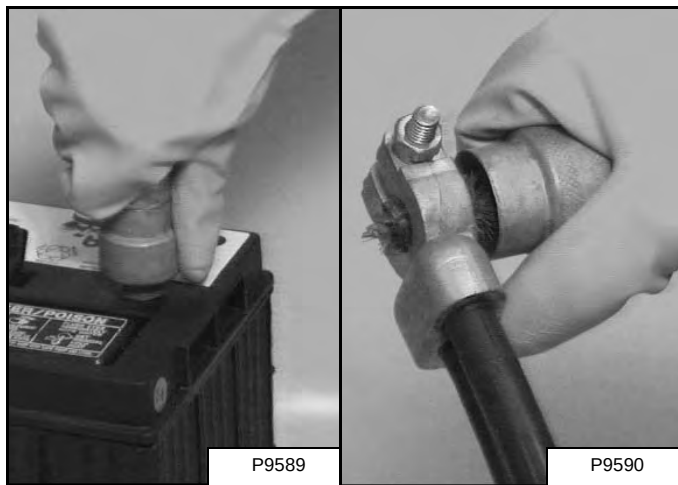
Open the right side cover.

Figure PM-34



The battery (Item 1) [Figure PM-34] in the front of the right side upperstructure.

Figure PM-35



The battery cables must be clean and tight [Figure PM-35]. Remove acid or corrosion from the battery and cables using a sodium bicarbonate and water solution. Cover the battery terminals and cable ends with battery saver grease to prevent corrosion.

Check for broken or loose connections.

If the battery cables are removed for any reason, disconnect the negative (-) cable first. When installing the battery cables, make the last connection the negative (-) cable to the battery.

The original equipment battery is maintenance free. If a replacement battery is installed, check the electrolyte level in the battery.

If the electrolyte level is lower than 0.50 inch (13 mm) above the plates, add distilled water only.

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

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ELECTRICAL SYSTEM (CONT'D)

Using A Booster Battery (Jump Starting)

IMPORTANT

If jump starting the excavator from a second machine:

When jump starting the excavator from a battery installed in a second machine, make sure the engine is **NOT** running while using the glow plugs. High voltage spikes from a running machine can burn out the glow plugs.

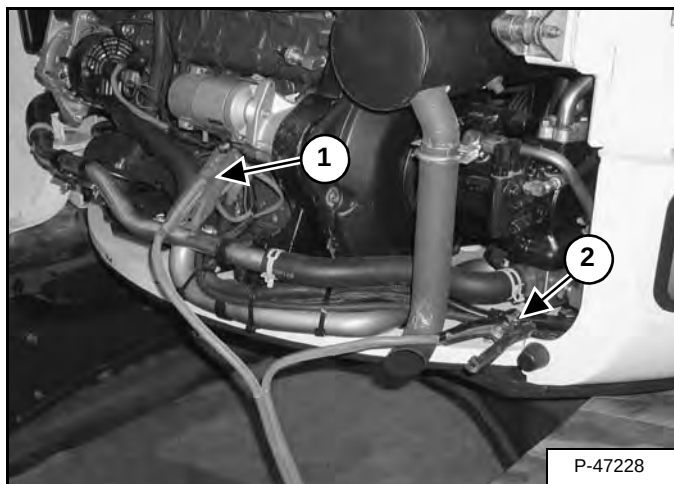
I-2060-0906

If it is necessary to use a booster battery to start the engine, BE CAREFUL! There must be one person in the operator's seat and one person to connect and disconnect the battery cables.

Be sure the key switch is OFF. The booster battery must be 12 volt.

Open the tailgate.

Figure PM-36



Connect one end of the first cable to the positive (+) terminal of the booster battery. Connect the other end of the same cable to the positive (+) terminal (Item 1) [Figure PM-36] of the excavator starter.

Connect one end of the second cable to the negative (-) terminal of the booster battery. Connect the other end of the same cable to the negative excavator cable (Item 2) [Figure PM-36] where it is fastened to the frame.

NOTE: (See Cold Temperature Starting on Page PM-31.)

Start the engine. After the engine has started, remove the ground (-) cable first (Item 2) [Figure PM-36].

Disconnect the cable from the excavator starter (Item 1) [Figure PM-36].

! 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

IMPORTANT

Damage to the alternator can occur if:

- Engine is operated with battery cables disconnected.
- Battery cables are connected when using a fast charger or when welding on the excavator. (Remove both cables from the battery.)
- Extra battery cables (booster cables) are connected wrong.

I-2223-0903

ELECTRICAL SYSTEM (CONT'D)

Removing And Installing Battery

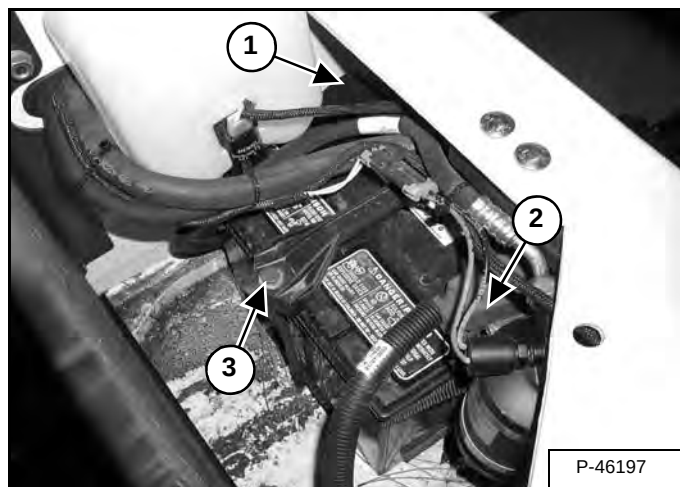
Open the right side cover.

Figure PM-37



Remove the nuts (Item 1) [Figure PM-37] and reposition the washer reservoir (if equipped).

Figure PM-38



Disconnect the negative (-) cable (Item 1) [Figure PM-38] first.

Disconnect the positive (+) cable (Item 2) [Figure PM-38].

Remove the bolts (Item 3) [Figure PM-38] and remove the hold down 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-38] 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

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HYDRAULIC SYSTEM

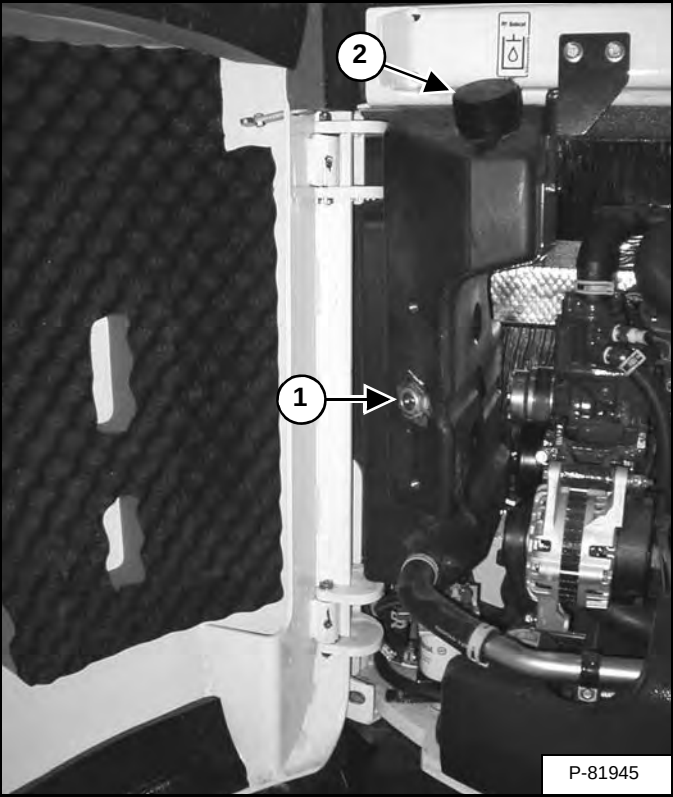
Checking And Adding Fluid

Put the machine on a flat level surface.

Retract the arm and bucket cylinders, put the bucket on the ground and raise the blade fully. (If equipped with angle blade, place blade in straight position.) Stop the engine.

Open the tailgate.

Figure PM-39



Check the hydraulic fluid level, it must be visible in the sight gauge (Item 1) [Figure PM-39].

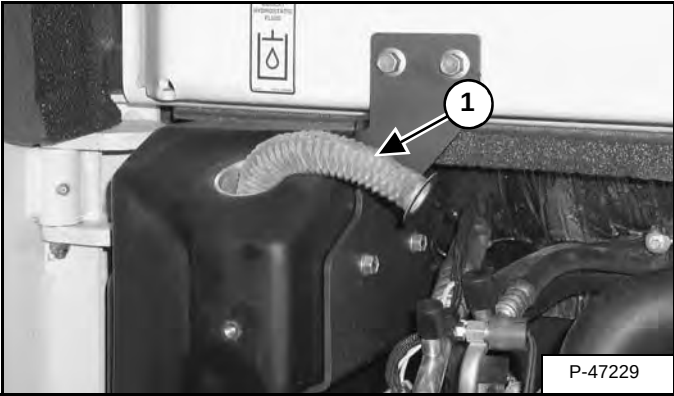
Clean the surface around the reservoir (breather) cap and remove the cap from the reservoir (Item 2) [Figure PM-39].

**WARNING**

AVOID INJURY OR DEATH
Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire.

W-2103-0508

Figure PM-40



Check the condition of the fill strainer screen (Item 1) [Figure PM-40]. Clean or replace as necessary.

Be sure the screen is installed before adding fluid.

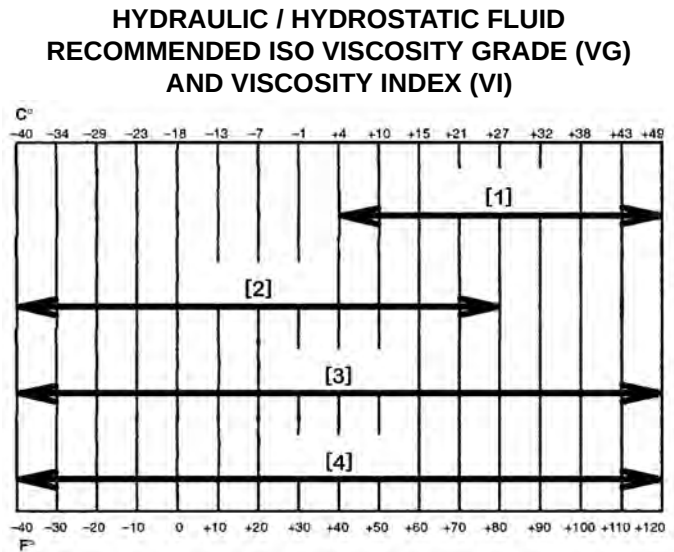
Add the correct fluid to the reservoir until it is visible in the sight gauge.(See Hydraulic Fluid Chart Below.)

Check the cap and clean as necessary. Replace the cap if damaged.

Install the cap. Close the tailgate.

Hydraulic / Hydrostatic Fluid Chart

Figure PM-41



- TEMPERATURE RANGE ANTICIPATED
DURING MACHINE USE**
- [1] VG 100; Minimum VI 120
 - [2] VG 46; Minimum VI 140
 - [3] Synthetic Fluid; VG 46; Minimum VI 150
 - [4] BOBCAT Hydraulic / Hydrostatic Fluid

Use only recommended fluid in the hydraulic system [Figure PM-41].

Add hydraulic fluid as needed to bring the level to the center of sight gauge (Item 1) [Figure PM-39].

Install the oil fill cap.

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HYDRAULIC SYSTEM (CONT'D)

Removing And Replacing The Hydraulic Filter

! WARNING

AVOID INJURY OR DEATH

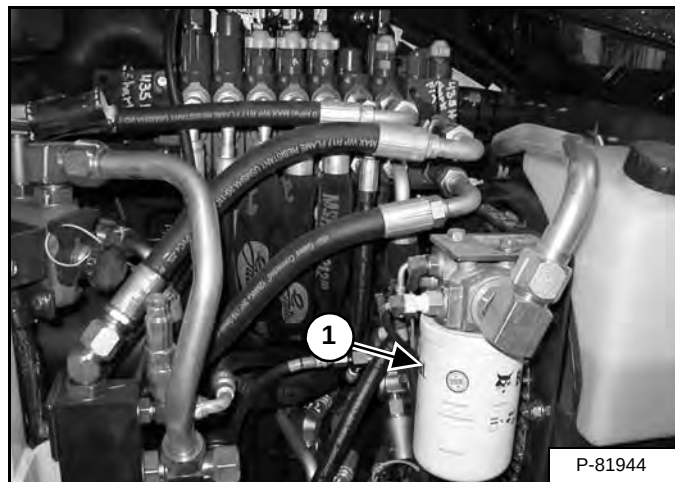
Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire.

W-2103-0508

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

Open the right side cover.

Figure PM-42



Remove the hydraulic filter (Item 1) [Figure PM-42].

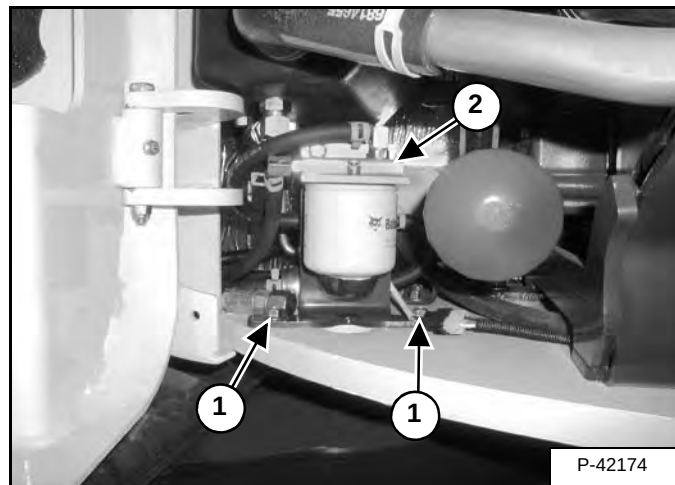
Clean the housing where the filter gasket makes contact.

Put clean hydraulic fluid on the gasket. Install the new filter and hand tighten only.

Removing And Replacing The Case Drain Filter

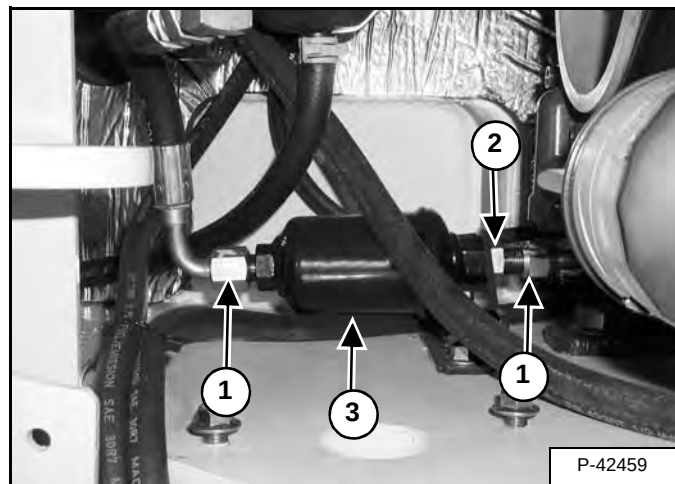
Open the tailgate.

Figure PM-43



Loosen the fuel filter mount bolts (Item 1) and reposition the fuel filter / fuel pump (Item 2) [Figure PM-43].

Figure PM-44



Remove the two hoses (Item 1). Remove the nut (Item 2) and remove the filter (Item 3) [Figure PM-44].

NOTE: Cap hoses immediately as oil will drain out quickly.

Install a new filter and tighten.

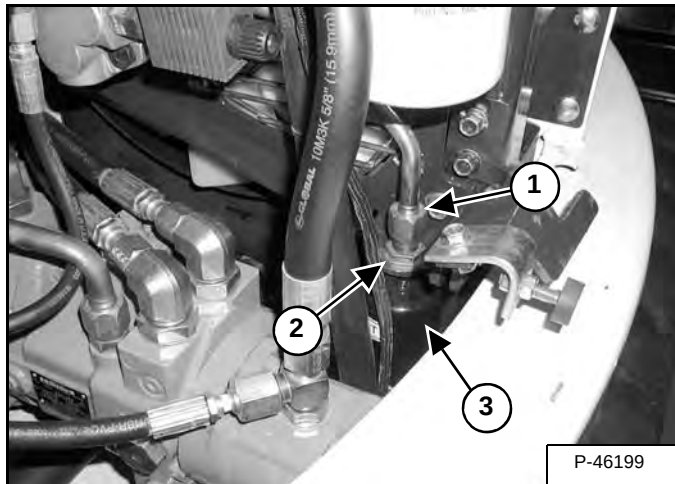
Dealer Copy -- Not for Resale

HYDRAULIC SYSTEM (CONT'D)

Removing And Replacing The Fan Filter

Open the right side cover.

Figure PM-45



Loosen the tubeline (Item 1) and remove the hose from the bottom of the filter. Remove the nut (Item 2) and remove the filter (Item 3) **[Figure PM-45]**. Install a new filter and tighten.

HYDRAULIC SYSTEM (CONT'D)

Removing And Replacing The Hydraulic Fluid

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

WARNING

AVOID INJURY OR DEATH

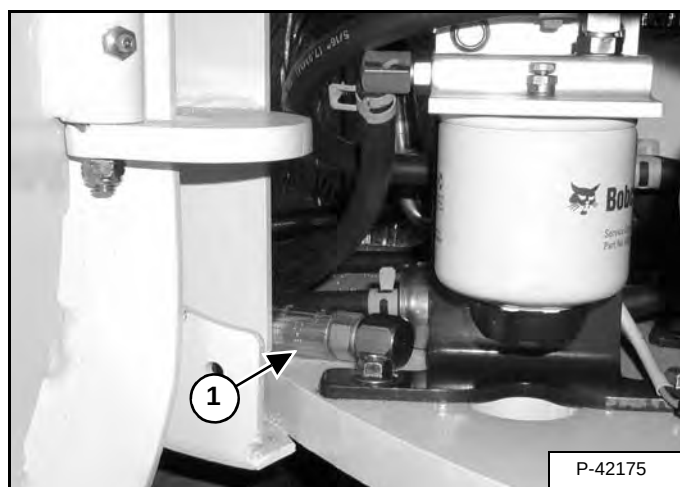
Diesel fuel or hydraulic fluid under pressure can penetrate skin or eyes, causing serious injury or death. Fluid leaks under pressure may not be visible. Use a piece of cardboard or wood to find leaks. Do not use your bare hand. Wear safety goggles. If fluid enters skin or eyes, get immediate medical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

W-2072-0807

Retract the arm and bucket cylinders, lower the bucket to the ground. Lower the blade to the ground. Stop the engine.

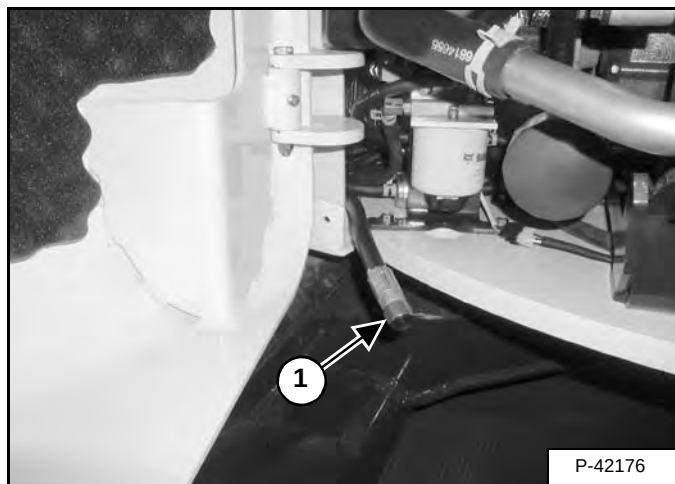
Open the tailgate.

Figure PM-46



Pull the hydraulic reservoir drain hose (Item 1) [Figure PM-46] out of the excavator upperstructure.

Figure PM-47



Remove the drain hose cap (Item 1) [Figure PM-47].

Drain the fluid into a container.

Recycle or dispose of the fluid in an environmentally safe manner.

Install the drain hose cap (Item 1) [Figure PM-47].

Always replace the filters when changing the hydraulic oil.

Install new Bobcat hydraulic fluid. (See Capacities on Page SPEC-9.) (See Hydraulic / Hydrostatic Fluid Chart on Page PM-26.) (See REGULAR MAINTENANCE ITEMS on Page V.)

After the hydraulic fluid has been drained from the excavator or after the hydraulic pump has been serviced, the hydraulic pump must be flooded with hydraulic oil. Allow sufficient time for the hydraulic fluid to gravity feed into the hydraulic pump before starting the machine.

Start the engine and operate the machine through the hydraulic functions. Stop the engine. Check the fluid level and add as needed.

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SPARK ARRESTOR MUFFLER

Cleaning Procedure

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

WARNING

AVOID INJURY OR DEATH

When an engine is running in an enclosed area, fresh air must be added to avoid concentration of exhaust fumes. If the engine is stationary, vent the exhaust outside. Exhaust fumes contain odorless, invisible gases which can kill without warning.

W-2050-0807

WARNING

Stop engine and allow the muffler to cool before cleaning the spark chamber. Wear safety goggles. Failure to obey can cause serious injury.

W-2011-1285

WARNING

Never use machine in atmosphere with explosive dust or gases or where exhaust can contact flammable material. Failure to obey warnings can cause injury or death.

W-2068-1285

WARNING

When the engine is running during service, the steering levers must be in neutral.

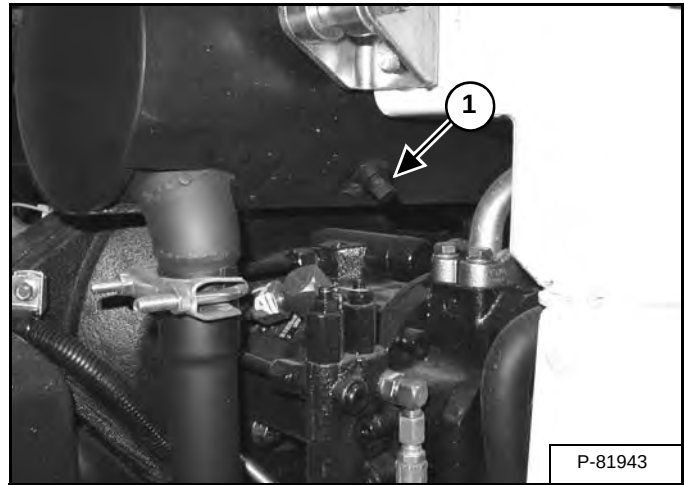
Failure to do so can cause injury or death.

W-2203-0595

Do not operate the excavator with a defective exhaust system.

Stop the engine. Open the tailgate.

Figure PM-48



Remove the plug (Item 1) [Figure PM-48] from the bottom of the muffler.

Start the engine and run for about 10 seconds while a second person, wearing safety glasses, holds a piece of wood over the outlet of the muffler. The carbon deposits will be forced out of the muffler plug hole (Item 1) [Figure PM-48].

Stop the engine. Install and tighten the plug.

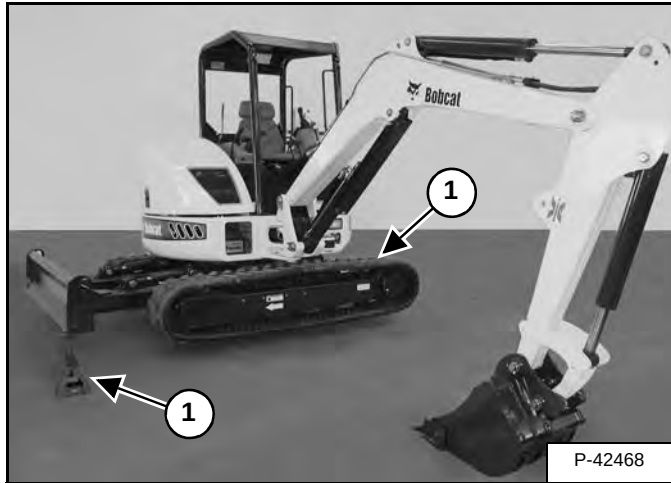
Close the tailgate.

TRACK TENSION

NOTE: The wear of the pins and bushings on the undercarriage vary with the working conditions and the different types of soil conditions. It is necessary to inspect track tension and maintain the correct tension. For the correct service interval (See **SERVICE SCHEDULE** on Page PM-5.)

Adjusting

Figure PM-49



Raise one side of the machine (Approximately four inches) using the boom and arm [Figure PM-49].

Raise the blade fully and install jackstands under the blade and track frame (Item 1) [Figure PM-49]. Lower the boom until all machine weight is on the jackstands.

Stop the engine.

WARNING

AVOID INJURY

Keep fingers and hands out of pinch points when checking the track tension.

W-2142-0903

Rubber Track Clearance

Figure PM-50

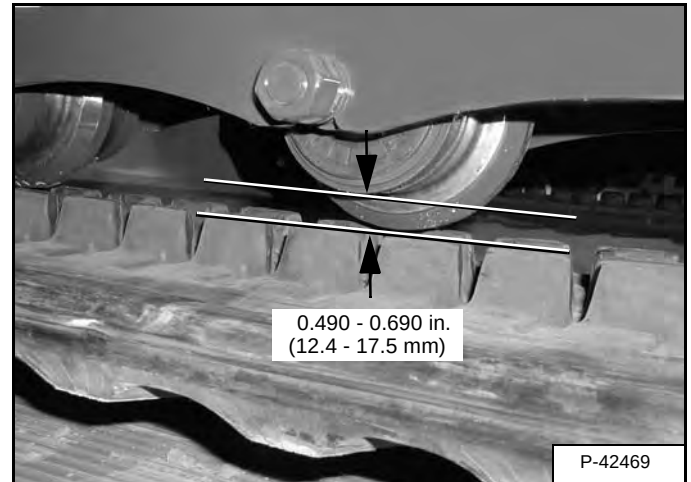
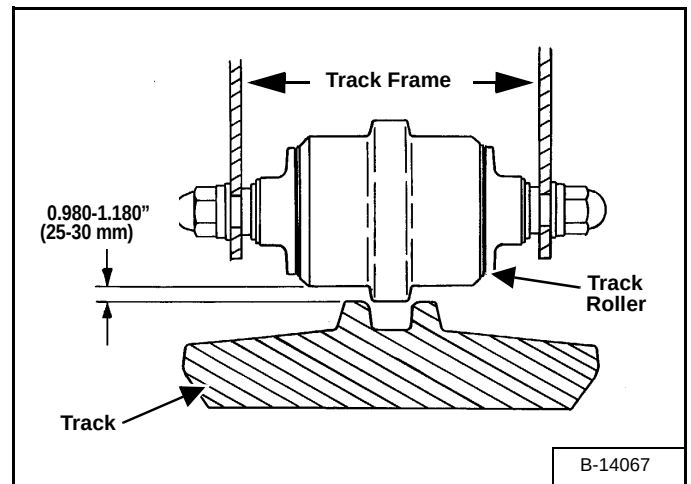


Figure PM-51



Measure the clearance at the middle track roller. Do not get fingers into pinch points between the track and the track roller. Use a bolt or a dowel of the appropriate size to check the gap between the contact edge of the roller and the top edge of the track guide [Figure PM-50] & [Figure PM-51].

Rubber Track Clearance - 0.980-1.180 inch (25-30 mm)

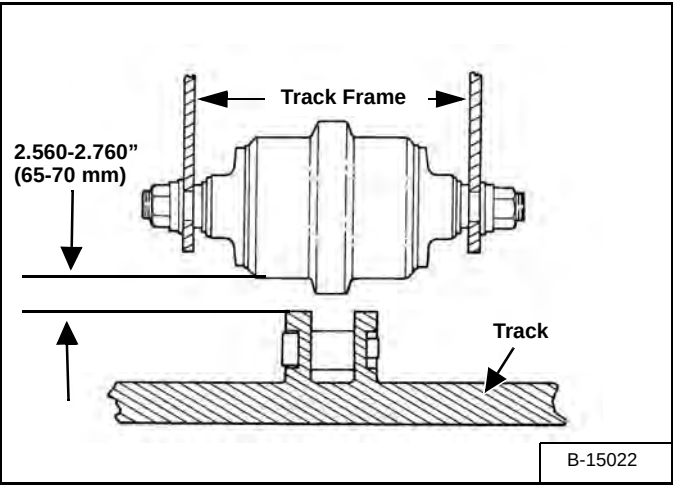
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TRACK TENSION (CONT'D)

Adjusting (Cont'd)

Steel Track Clearance

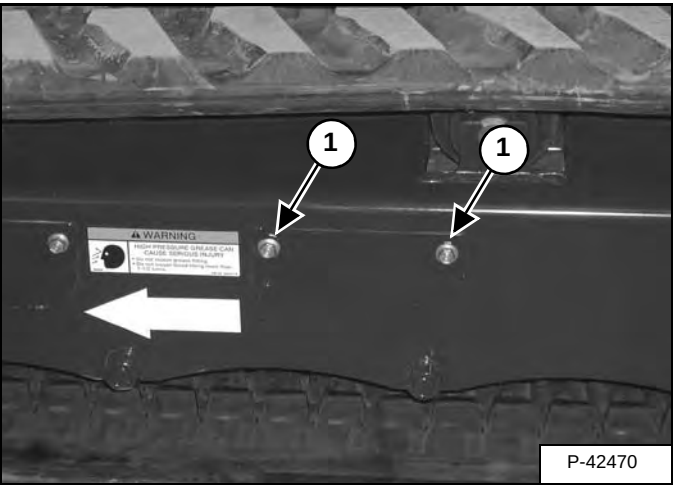
Figure PM-52



Measure the track clearance at the middle track roller. Do not get fingers into pinch points between the track and the track roller. Use a bolt or dowel of the appropriate size to check the gap between the contact edge of the roller and the top edge of the track guide [Figure PM-52].

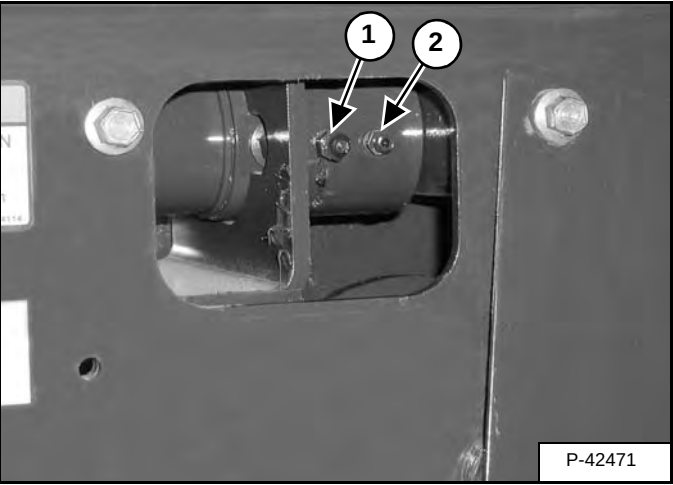
Steel Track Clearance - 2.560 - 2.760 in. (65 - 70 mm)

Figure PM-53



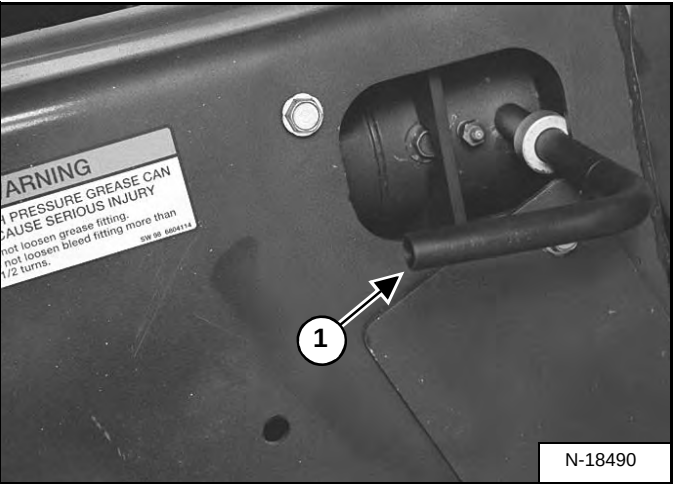
Loosen the two bolts from the cover (Item 1) [Figure PM-53]. Pivot the cover downward.

Figure PM-54



Add grease to the fitting (Item 1) [Figure PM-54] until the track tension is correct.

Figure PM-55



Use tool MEL1560 (Item 1) [Figure PM-55] to loosen the bleed fitting (Item 2) [Figure PM-54] to release tension from the track.

NOTE: Do not loosen the grease fitting (Item 1) [Figure PM-54].

Repeat the procedure for the other side.



HIGH PRESSURE GREASE CAN CAUSE SERIOUS INJURY

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

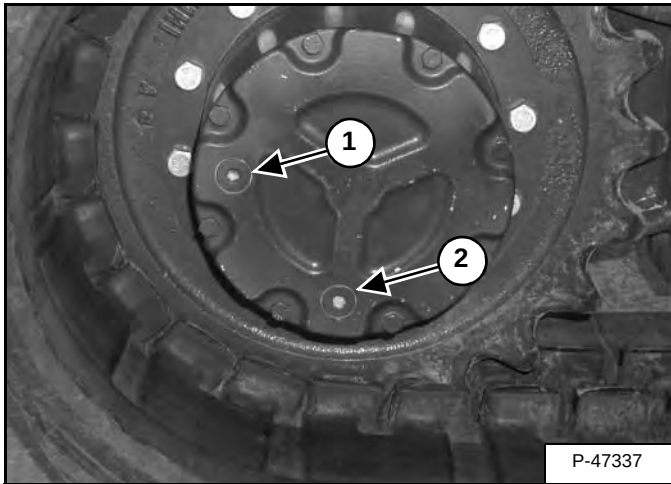
W-2781-0109

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TRAVEL MOTOR

Checking And Adding Oil

Figure PM-56



Park the excavator on a level surface with the plugs (Item 1 & 2) **[Figure PM-56]** in the position as shown.

Remove the plug (Item 1) **[Figure PM-56]**. The lube level must be at the bottom edge of the hole.

Add lubricant through the hole if the lube level is low. (See Capacities on Page SPEC-9.)

Removing And Replacing Oil

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

Park the excavator on a level surface with plugs (Item 1 & 2) **[Figure PM-56]** in the position shown. Remove both plugs and drain the lubricant into a container.

WARNING

AVOID INJURY OR DEATH

Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire.

W-2103-0508

Install the bottom plug (Item 2) **[Figure PM-56]**. Add lubricant through the top plug hole until the lube level is at the bottom edge of the hole. (See Capacities on Page SPEC-9.)

Install the plug (Item 1) **[Figure PM-56]**.

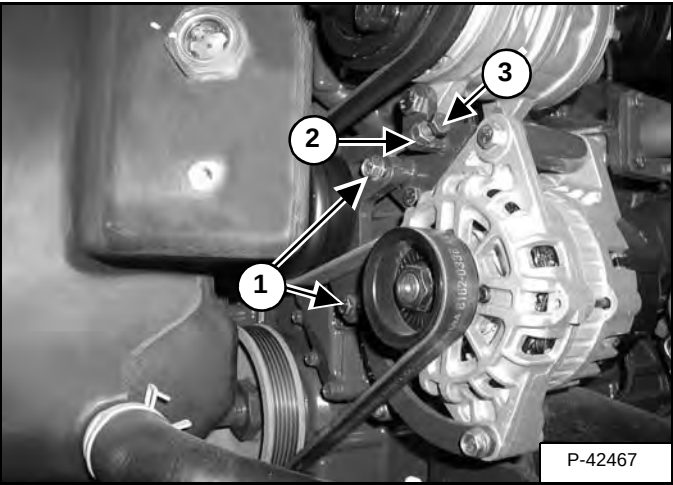
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ENGINE ACCESSORY DRIVE BELT

Belt Adjustment

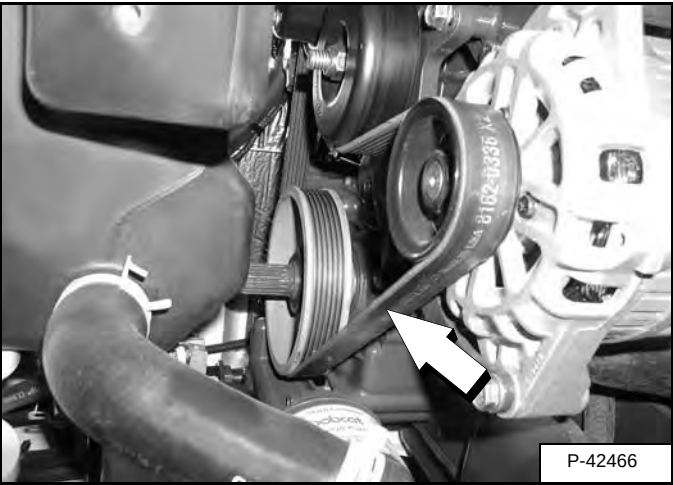
Open the tailgate.

Figure PM-57



Loosen the two bolts (Item 1). Loosen the nut (Item 2). Tighten the bolt (Item 3) [Figure PM-57] until the belt tension is correct. Tighten the two bolts and nut.

Figure PM-58

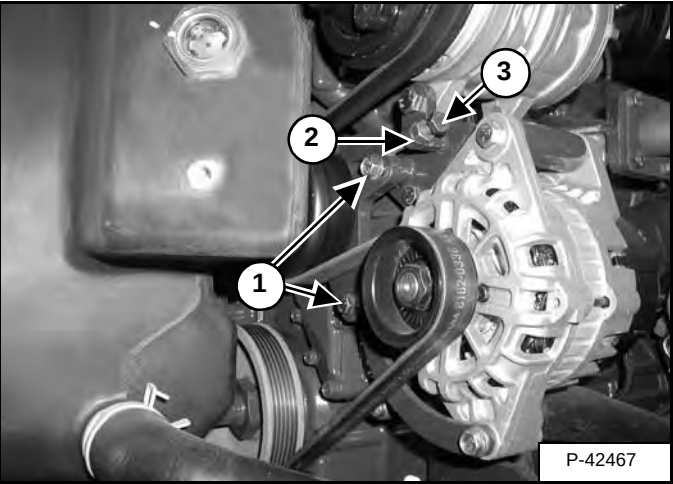


Using a belt tension gauge, measure the belt tension midway between the crankshaft pulley and alternator pulley [Figure PM-58].

Belt tension is as follows:
New belt 256 lbf. (1142 N)
Used belt 126 lbf. (560 N)

Belt Replacement

Figure PM-59



Loosen the two bolts (Item 1). Loosen the nut (Item 2). Loosen the bolt (Item 3) [Figure PM-59] until the belt is loose. Remove the old belt and install a new belt.

Tighten the bolt (Item 3) until the belt tension is correct. Tighten the nut (Item 2). Tighten the two bolts (Item 1)[Figure PM-59].

**WARNING**

AVOID INJURY OR DEATH

- Do Not Operate with damaged or missing screens, shields or rubber deflectors.
- Stop engine before cleaning or servicing.
- Contact with moving parts or flying objects can cause injury or death.

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DRIVE BELT (FASTTRACK)

Belt Adjustment

The drive belt must be inspected and adjusted after the first 100 hrs of operation. Adjust the drive belt at 500 hrs thereafter. (See SERVICE SCHEDULE on Page PM-5.)

Incorrect belt tension can cause hydrostatic pump failure or excessive belt wear.

Open the right side cover.

See your Bobcat dealer for belt replacement.

Figure PM-60

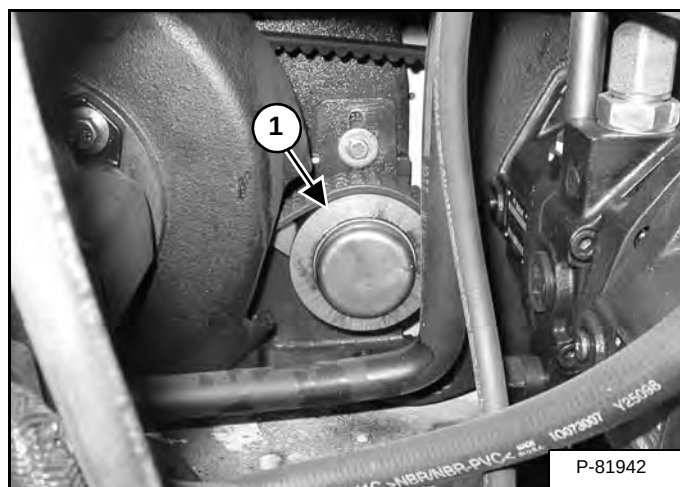
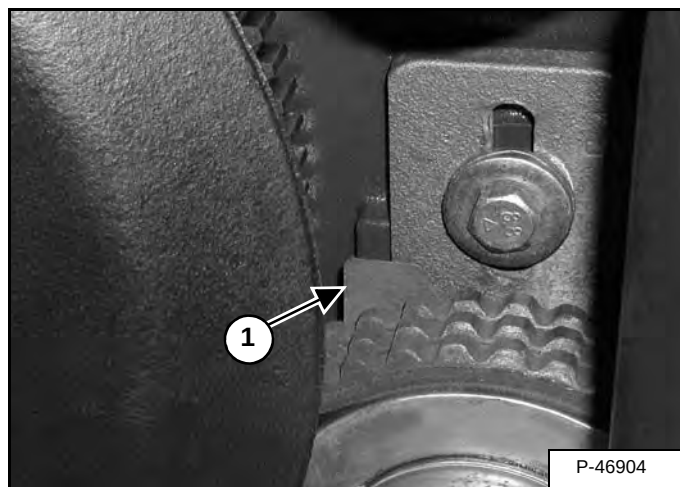
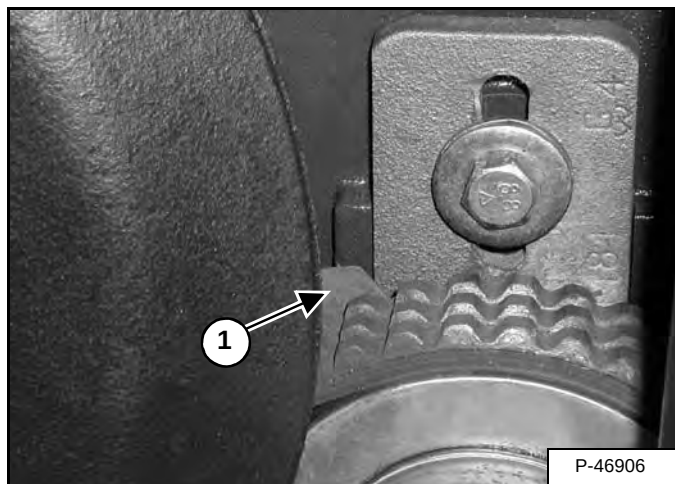


Figure PM-61



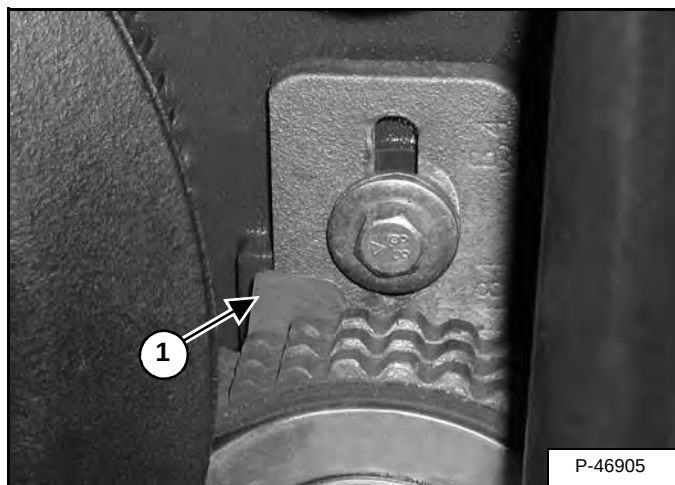
When the belt tension indicator (Item 1) [Figure PM-60] & [Figure PM-61] is in the position as shown, the belt tension is correct.

Figure PM-62



When the belt tension indicator (Item 1) [Figure PM-62] is in the position as shown, the belt tension is too loose.

Figure PM-63



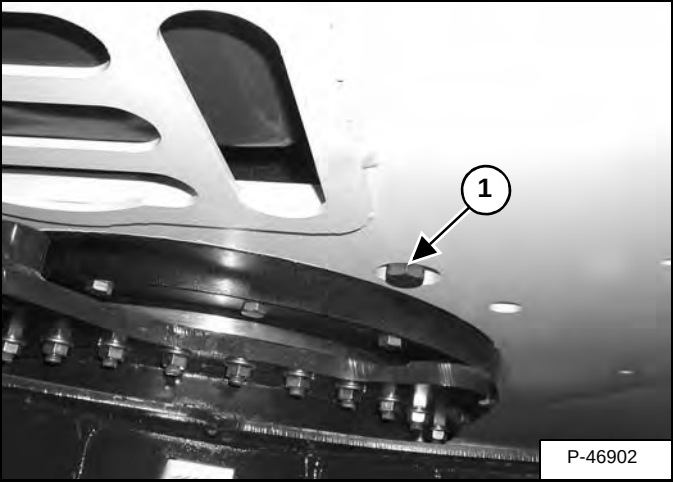
When the bolt tension indicator (Item 1) [Figure PM-63] is in the position shown, the belt tension is too tight.

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DRIVE BELT (FASTTRACK) (CONT'D)

Belt Adjustment (Cont'd)

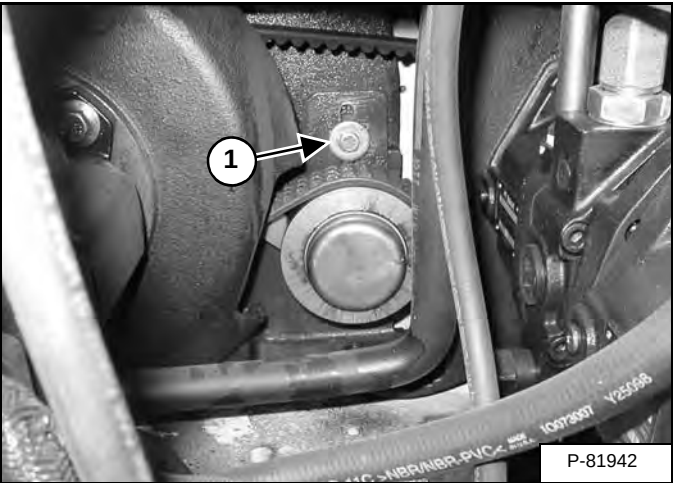
Figure PM-64



Install a 0.750 - 10 UNC x 2.50 in. bolt (Item 1) [Figure PM-64] through the upperstructure and into the mount.

Tighten the bolt until it contacts the idler.

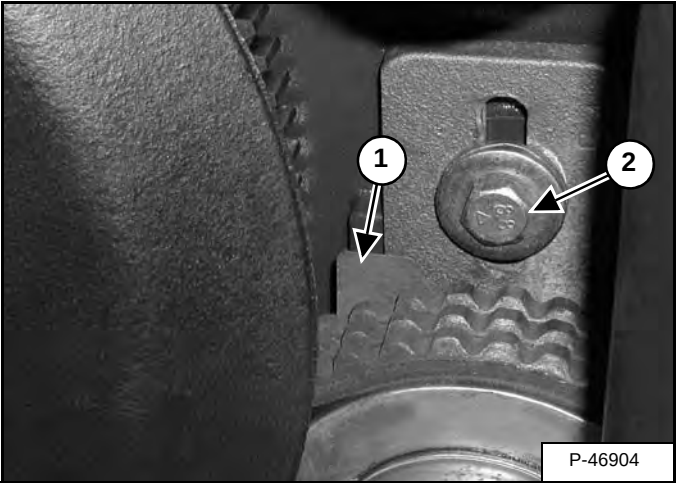
Figure PM-65



Loosen the bolt (Item 1) [Figure PM-65].

Turn the bolt (Item 1) [Figure PM-64] out (counter clockwise) until the indicator (Item 2) [Figure PM-65] begins to rotate counter clockwise. This will indicate that the idler is operating on spring tension.

Figure PM-66



Turn the bolt (Item 1) [Figure PM-64] in (clockwise) until the indicator (Item 1) [Figure PM-66] is at the position shown.

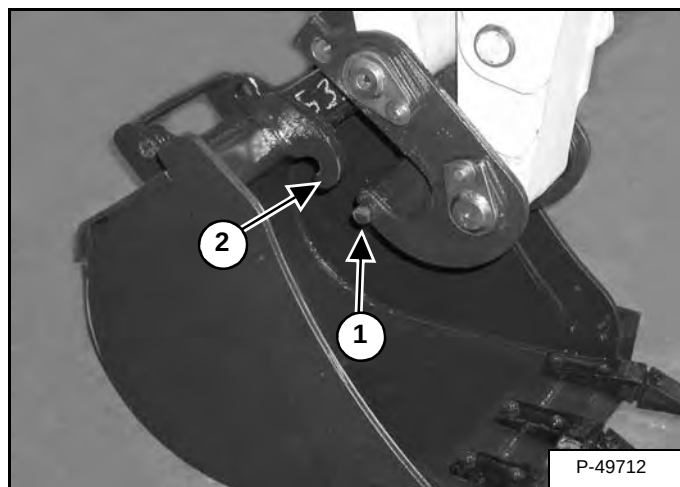
Tighten the bolt (Item 1) [Figure PM-66] to 30 - 33 ft.-lb. (40 - 45 N•m) torque.

Remove the bolt (Item 1) [Figure PM-64] from the mount.

X-CHANGE

Inspection And Maintenance

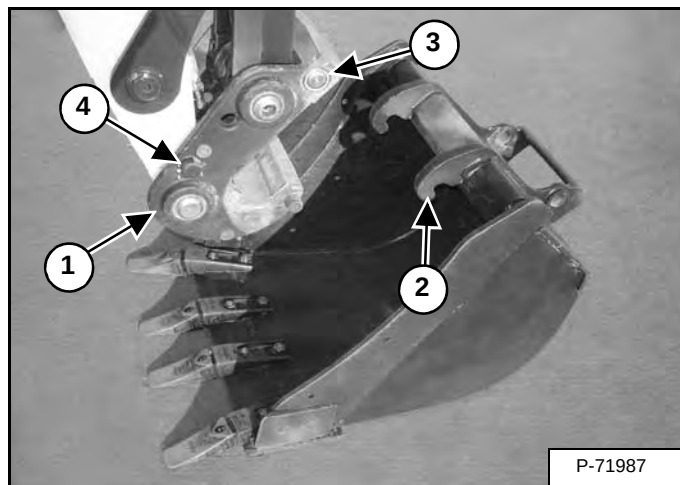
Figure PM-67



Inspect the X-Change for wear or damage. Inspect the X-Change pins (Item 1) and hooks (Item 2) **[Figure PM-67]** (on the attachment) for wear or damage.

Repair or replace damaged parts.

Figure PM-68



Hydraulic X-Change (if equipped)

Inspect the X-Change for wear or damage. Inspect the X-Change pins (Item 1) and hooks (Item 2) **[Figure PM-68]** (on the attachment) for wear or damage.

Inspect the hydraulic pins (Item 3) **[Figure PM-68]** (both sides) for wear or damage.

Inspect the retainer pin and clips (Item 4) **[Figure PM-68]** (both sides) for wear or damage. **ONLY USE APPROVED RETAINER PINS AND CLIPS.**

Repair or replace damaged or missing parts.

TRACK ROLLER AND IDLER LUBRICATION

Procedure

The track rollers and idlers require no maintenance. The bearings are a sealed design.

BUCKET

Bucket Teeth Removal And Installation

WARNING

Wear safety glasses to prevent eye injury when any of the following conditions exist:

- Pressurized fluids and springs or other stored energy components.
- Flying debris or loose material is present.
- Engine is running.
- Tools are being used.

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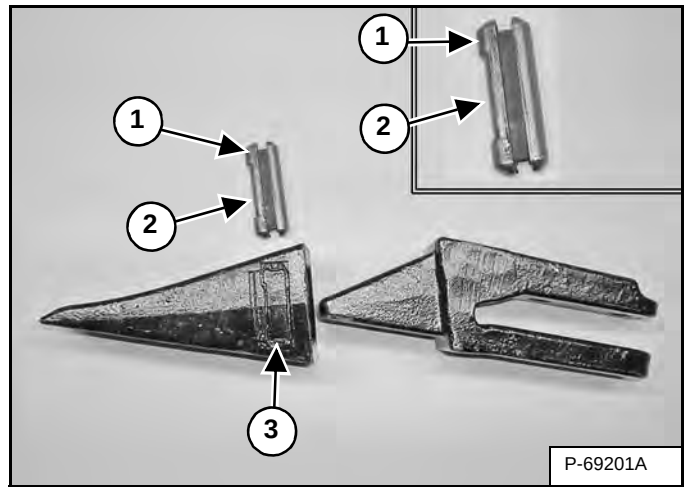
Position the bucket so the bucket teeth are at a 30° angle up from the ground for accessibility to the teeth.

Lower the boom until the bucket is fully on the ground.

Stop the engine and exit the excavator.

NOTE: The later style tooth points and retaining pins can be used on the early style shanks.

Figure PM-69



The removal and installation procedure for the later style tooth point and tooth shank is the same as the early style.

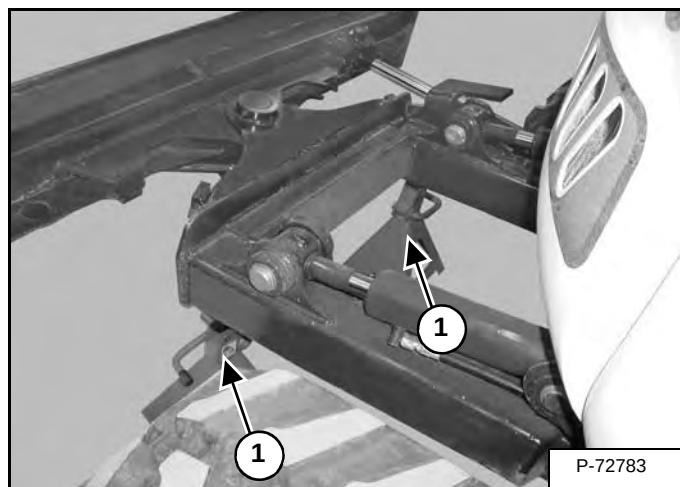
The later style tooth has a unique retaining pin (Item 1). The retaining pin must be installed as shown [notch (Item 2) to the front] for proper fit and tooth retention. The side of the tooth point (Item 3) [Figure PM-69] also shows the correct orientation of the retaining pin.

Installation: Position the new tooth point on the shank and install a new retaining pin. Install the retaining pin until it is flush with the top of the point.

CUTTING EDGE (ANGLE BLADE ONLY)

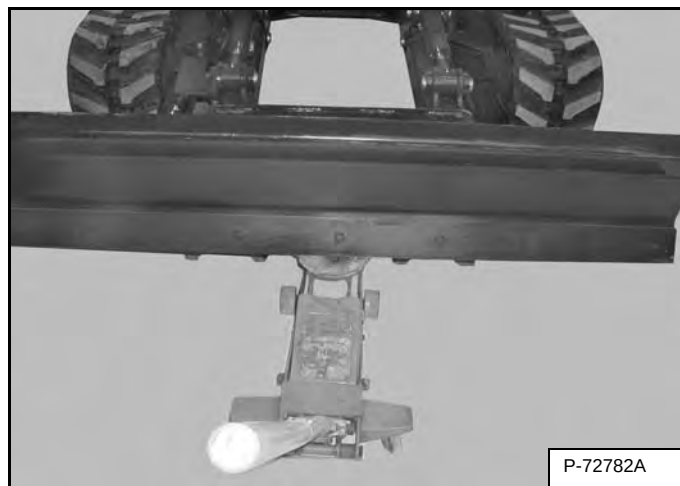
Removal And Installation

Figure PM-70



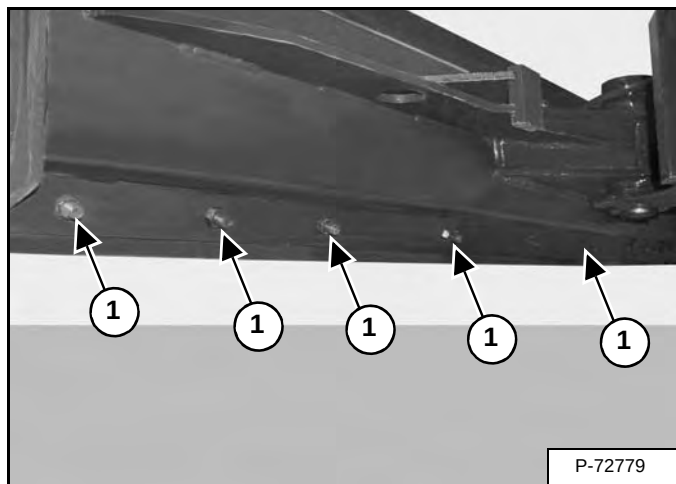
Raise the blade fully and install jackstands (Item 1) [Figure PM-70] under the blade arms.

Figure PM-71



Place a jack under the cutting edge [Figure PM-71].

Figure PM-72



Remove the ten nuts (Item 1) [Figure PM-72] and bolts from the cutting edge.

Lower the jack and remove the cutting edge.

Installation: Tighten nuts to 90 ft.-lb. (125 N•m) torque.

NOTE: Cutting edge is reversible and replaceable.

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LUBRICATING THE EXCAVATOR

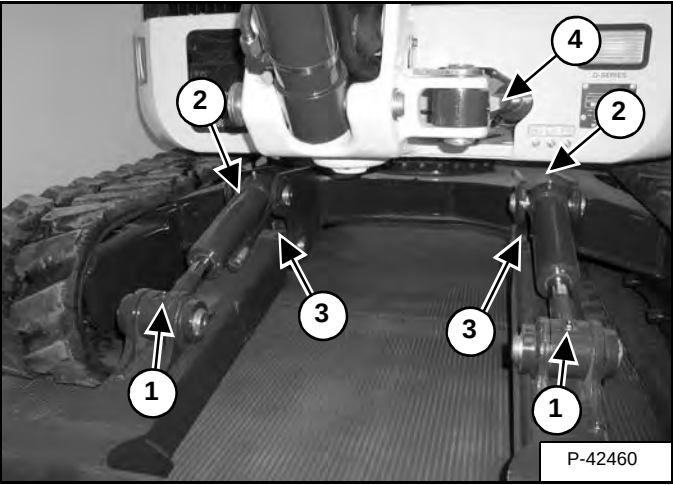
Lubrication Locations

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

Always use a good quality lithium based multipurpose grease when lubricating the machine. Apply the lubricant until extra grease shows.

Lubricate the following locations on the Hydraulic Excavator **EVERY 8-10 HOURS**:

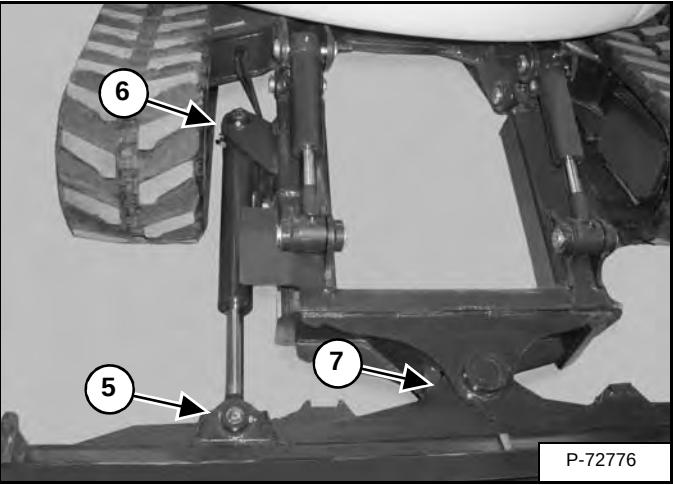
Figure PM-73



Ref Description (# of Fittings)

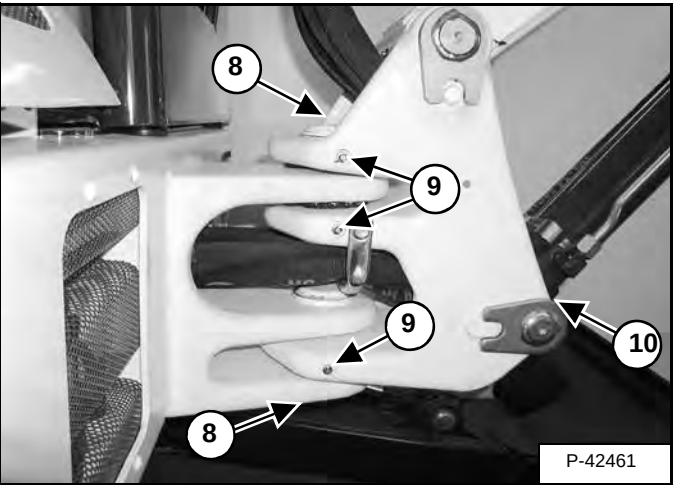
- 1. Blade Cylinder Rod End (2)
- 2. Blade Cylinder Base End (2)
- 3. Blade Pivots (2)
- 4. Boom Swing Cylinder Rod End (1) [Figure PM-73]

Figure PM-74



- 5. Angle Blade Cylinder Rod End (1) [Figure PM-74] (If Equipped)
- 6. Angle Blade Cylinder Base End (1) [Figure PM-74] (If Equipped)
- 7. Angle Blade Pivot (1) [Figure PM-74] (If Equipped)

Figure PM-75



- 8. Boom Swing Pin (2)
- 9. Boom Swing Pivot (3)
- 10. Boom Cylinder Base End (1) [Figure PM-75]

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LUBRICATING THE EXCAVATOR (CONT'D)

Lubrication Locations (Cont'd)

Figure PM-76

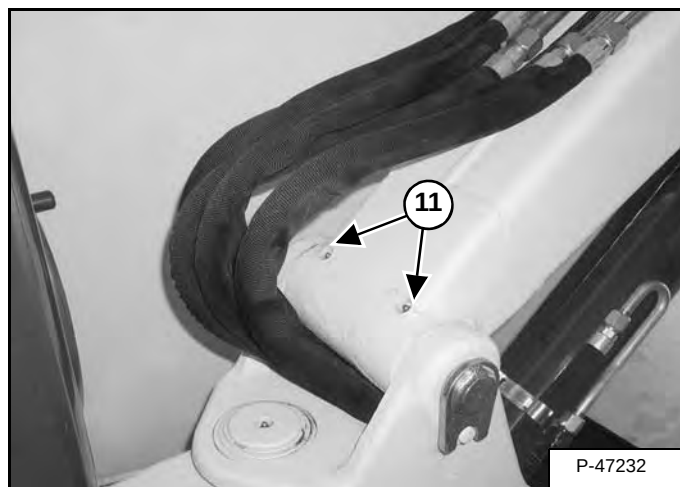


Figure PM-77

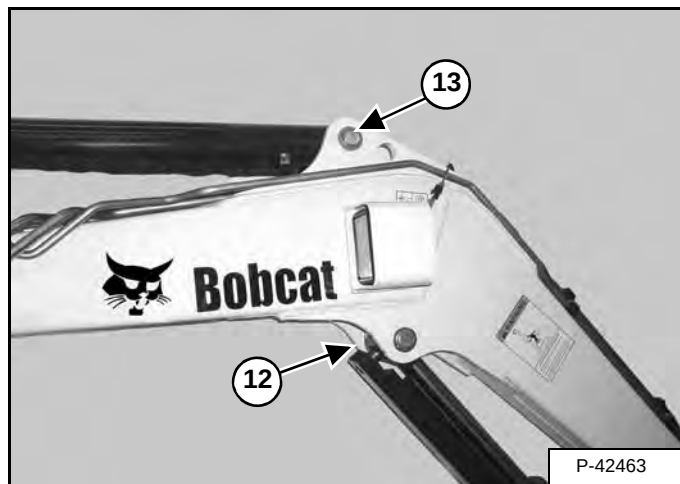


Figure PM-78

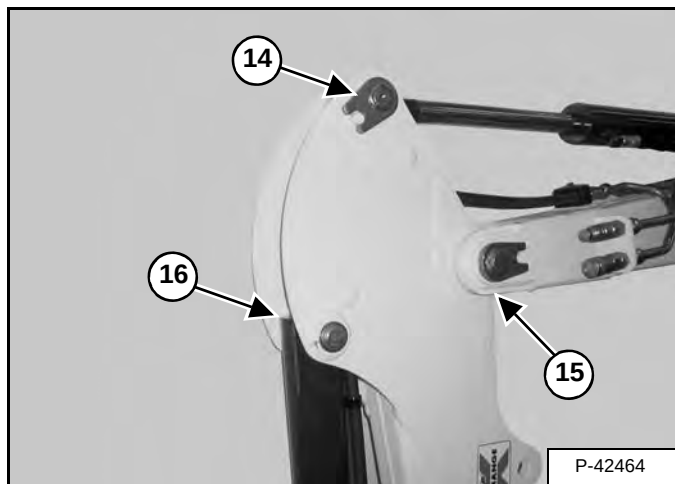
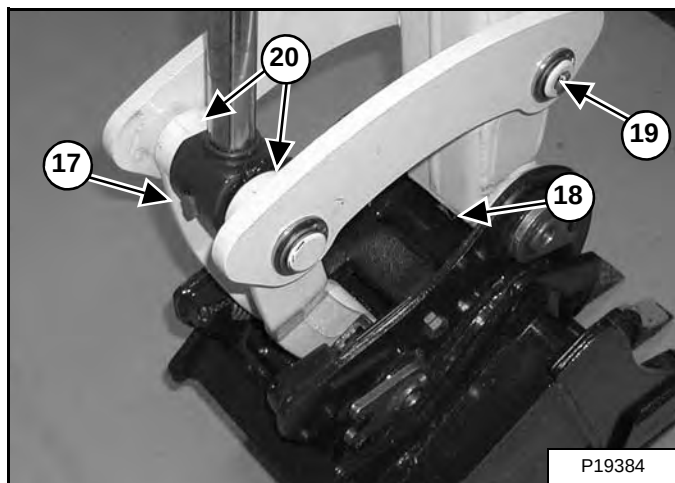


Figure PM-79

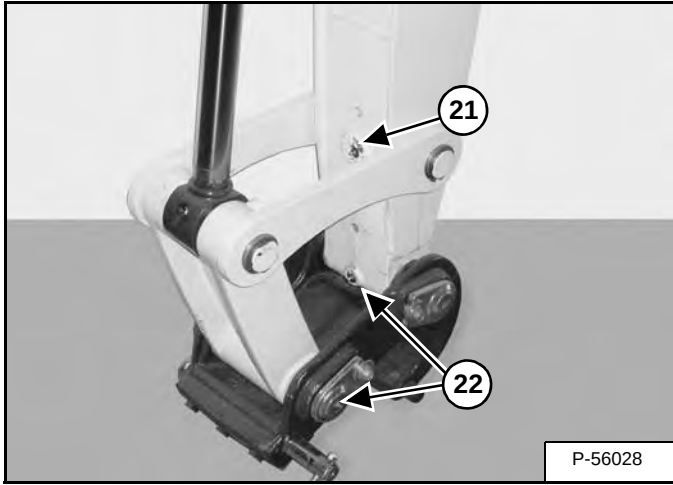


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LUBRICATING THE EXCAVATOR (CONT'D)

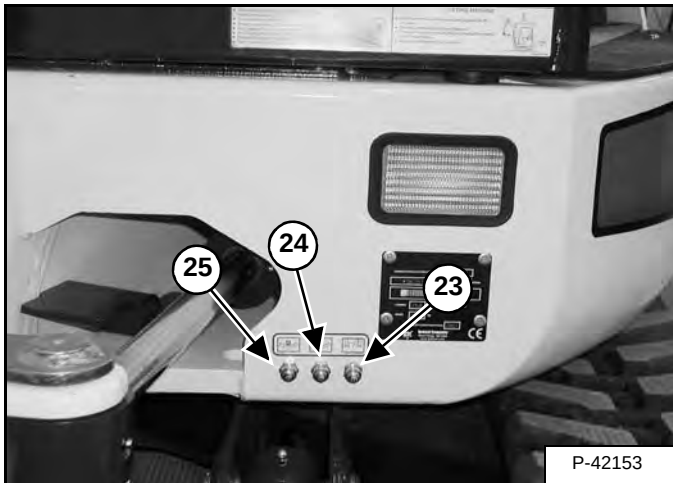
Lubrication Locations (Cont'd)

Figure PM-80



- 21. Pin On Bucket Link (1)
- 22. Pin On Bucket Pivot (2) [Figure PM-80] (qty 3 if equipped with Hydraulic X-Change)

Figure PM-81

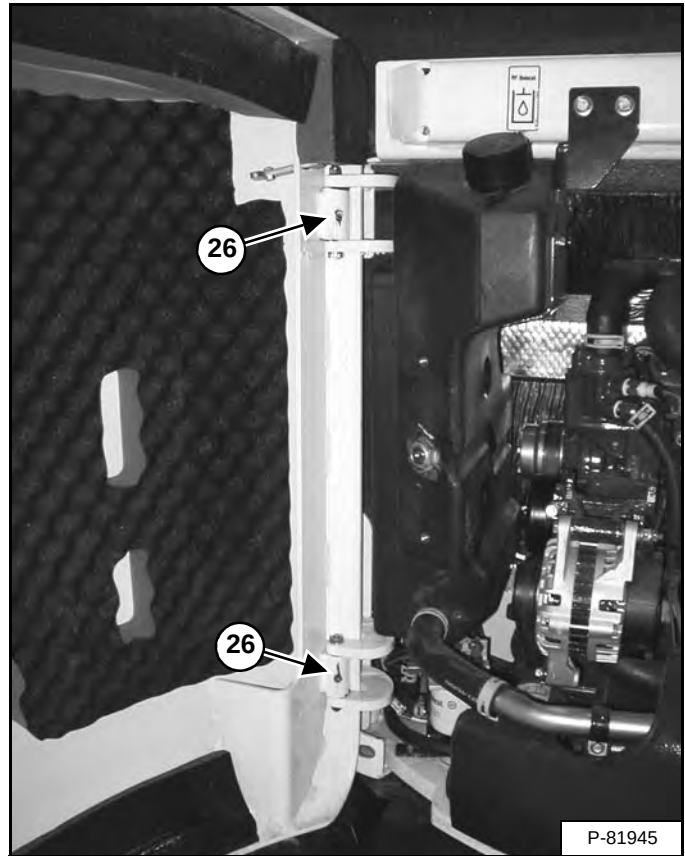


- 23. Boom Swing Cylinder Base End (1) [Figure PM-81]

Lubricate the following locations on the hydraulic excavator **EVERY 50 HOURS**:

- 24. Slew Circle (1) [Figure PM-81]
- 25. Slew Pinion (1) [Figure PM-81] (Install 3 to 4 pumps of grease then rotate the upperstructure 90°. Install 3 to 4 pumps of grease and again rotate the upperstructure 90°. Repeat this until the slew pinion has been greased at four positions.)

Figure PM-82

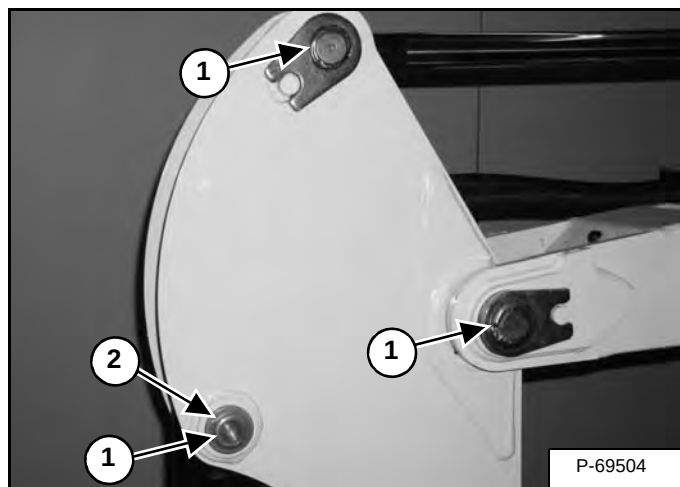


- 26. Tailgate Hinge (2) [Figure PM-82]

PIVOT PINS

Inspection And Maintenance

Figure PM-83



The boom, arm and cylinders pivots (Item 1) have a large pin held in position with a snap ring (Item 2) **[Figure PM-83]**.

Check that the snap rings are securely inserted into the grooves on the pins and that the snap rings are not damage. See your Bobcat dealer for replacement parts.

EXCAVATOR STORAGE AND RETURN TO SERVICE

Storage

Sometimes it may be necessary to store your Bobcat Excavator for an extend period of time. Below is a list of items to perform before storage.

- Thoroughly clean the excavator including the engine compartment.
- Lubricate the excavator.
- Replace worn or damaged parts.
- Drive the excavator onto planks in a dry protected shelter.
- Lower the boom fully with the bucket flat on the ground.
- Put grease on any exposed cylinder rods.
- Put fuel stabilizer in the fuel tank and run the engine a few minutes to circulate the stabilizer to the pump and fuel injectors.

If biodiesel fuel has been used, perform the following:

Drain the fuel tank, refill with 100% petroleum diesel fuel, add fuel stabilizer and run the engine for at least 30 minutes.

- Drain and flush the cooling system. Refill with premixed coolant.
- Replace all fluids and filters (engine, hydraulic).
- Replace all filters (i.e.: air cleaner, heater, etc.).
- Put all controls in neutral position.
- Remove the battery. Be sure the electrolyte level is correct then charge the battery. Store it in a cool dry place above freezing temperatures and charge it periodically during storage.
- Cover the exhaust pipe opening.
- Tag the machine to indicate that it is in storage condition.

Return to Service

After the Bobcat Excavator has been in storage, it is necessary to follow a list of items to return the excavator to service.

- Check the engine and hydraulic oil levels; check coolant level.
- Install a fully charged battery.
- Remove grease from exposed cylinder rods.
- Check all belt tensions.
- Be sure all shields and guards are in place.
- Lubricate the excavator.
- Remove cover from exhaust pipe opening.
- Start the engine and let run for a few minutes while observing the instrument panels and systems for correct operation.
- Drive the excavator off of the planks.
- Operate machine, check for correct function.
- Stop the engine and check for leaks. Repair as needed.

SYSTEM SETUP AND ANALYSIS

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Password Lockout Feature	SA-5
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Viewing Service Codes (Keyless)	SA-6
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MAINTENANCE CLOCK	SA-7
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Reset	SA-7
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SYSTEM SETUP & ANALYSIS

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DIAGNOSTIC SERVICE CODE

Service Codes List

CODE		CODE	
02-16	Hydraulic charge filter not connected	20-02	Two speed / angle blade output error ON
02-17	Hydraulic charge filter plugged	20-03	Two speed / angle blade output error OFF
03-09	Battery voltage low	21-02	Glow plug output error ON
03-10	Battery voltage high	21-03	Glow plug output error OFF
03-11	Battery voltage extremely high		
03-14	Battery voltage extremely low	22-02	Starter relay output error ON
03-22	Battery voltage out of range low	22-03	Starter relay output error OFF
04-14	Oil pressure extremely low	26-02	Front base output error ON
04-15	Oil pressure shutdown level	26-03	Front base output error OFF
05-09	Hydraulic charge pressure low	27-02	Front rod output error ON
05-14	Hydraulic charge pressure extremely low	27-03	Front rod output error OFF
05-15	Hydraulic charge pressure shutdown level		
05-21	Hydraulic charge pressure out of range high	28-02	Diverter output error ON
05-22	Hydraulic charge pressure out of range low	28-03	Diverter output error OFF
06-10	Engine speed high	30-28	Watch dog failure
06-11	Engine speed extremely high		
06-15	Engine speed shutdown level	31-28	Recovery mode failure
06-18	Engine speed out of range high		
		33-23	Controller not calibrated
07-10	Hydraulic oil temperature high		
07-11	Hydraulic oil temperature extremely high	35-05	Hydraulic fan solenoid short to battery
07-15	Hydraulic oil temperature shutdown level	35-06	Hydraulic fan solenoid short to ground
07-21	Hydraulic oil temperature out of range high		
07-22	Hydraulic oil temperature out of range low	60-21	Sec. aux. thumbswitch out of range high
		60-22	Sec. aux. thumbswitch out of range low
08-10	Engine coolant temperature high	60-23	Sec. aux. thumbswitch not calibrated
08-11	Engine coolant temperature extremely high		
08-15	Engine coolant temperature shutdown level	62-04	Load moment monitoring in error
08-21	Engine coolant temperature out of range high		
08-22	Engine coolant temperature out of range low	63-05	Work group/travel console sensor
		63-06	Work group/travel console sensor
09-09	Fuel level low		
09-21	Fuel level out of range high	64-05	Switched power/acc. relay short to battery
09-22	Fuel level out of range low	64-06	Switched power/acc. relay short to ground
		64-07	Switched power/acc. relay open circuit
12-21	Primary auxiliary PWM switch out of range high		
12-22	Primary auxiliary PWM switch out of range low	65-02	Work group/travel lockout solenoid error ON
12-23	Primary auxiliary PWM switch not calibrated	65-03	Work group/travel lockout solenoid error OFF
		65-05	Work group/travel lockout solenoid short to battery
13-05	Fuel shut-off hold solenoid short to battery	65-06	Work group/travel lockout solenoid short to ground
13-06	Fuel shut-off hold solenoid short to ground	65-07	Work group/travel lockout solenoid open circuit
13-07	Fuel shut-off hold solenoid secondary open circuit		
		66-05	Travel solenoid short to battery
14-02	Fuel shut-off hold solenoid short to battery	66-06	Travel solenoid short to ground
14-03	Fuel shut-off hold solenoid short to ground		

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DISPLAY CONTROLLER PANEL SETUP

Passwords

All new machines with Deluxe Instrumentation arrive at Bobcat Dealerships with the panel in locked mode. This means that a password must be used to start the engine.

For security purposes, your dealer may change the password and also set it in the locked mode. Your dealer will provide you with the password.

Master Password:

A permanent, randomly selected password is set at the factory which cannot be changed. This password is used for service by the Bobcat dealer if the Owner Password is not known; or to change the Owner Password.

Owner Password:

There is only one Owner Password (**Code 0**). It must be used to change the owner or operator passwords. See below for changing the Owner Password.

Operator Password:

There can be up to three operator Passwords (**Code 1, Code 2, Code 3**). See below for changing the Operator Password.

Password Entry (For Starting and Operating the Machine)

Press ENTER CODE button (Item 1). The panel will become lighted and there will be two short beeps. **Code** will appear on the LCD (Item 2) [Figure SA-1].

NOTE: After you press ENTER CODE you have 40 seconds to use the keypad (Item 3) [Figure SA-1] to enter the password. (If more than 40 seconds is used, the process will abort and you will need to start over.

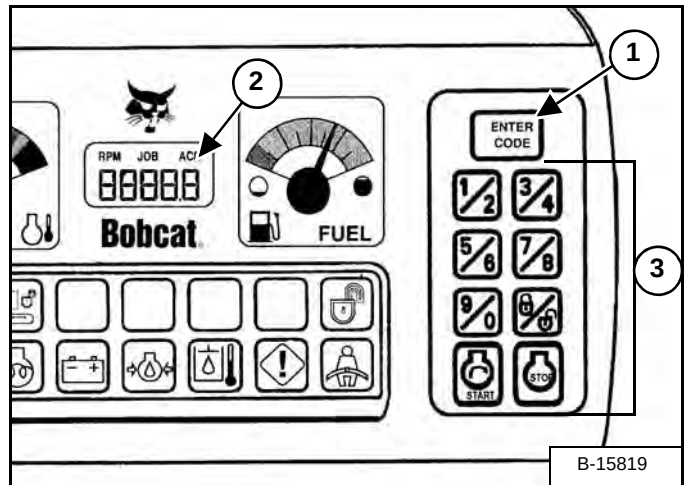
Enter the password. For each digit that you enter, a dash will appear on the LCD. If the password was entered correctly, there will be one long beep.

NOTE: If the password was incorrect there will be three short beeps and Error will appear on the LCD. Press the ENTER CODE button again and start over. After three failed attempts, you must wait three minutes to try again.

You are now ready to start and operate the machine.

If you will be changing passwords, do not start the engine. (See Changing The Operator Password on Page SA-4.)

Figure SA-1



Changing The Operator Password

Perform Password Entry at left, but do not start the engine.

Press and hold the ENTER CODE button (Item 1) for three seconds. Code 1 will appear on the LCD (Item 2) [Figure SA-1].

Press the ENTER CODE button until the desired Code (**Code 0, Code 1, Code 2, Code 3**) appears. Code 0 is Owner Password, the other codes are Operator passwords. You now have 40 seconds to use the keypad (Item 3) [Figure SA-1] to enter each digit of a new four digit password.

Enter the new four digit password. After the fourth digit is entered, there will be two short beeps and **rPEAt** will appear.

Re-enter the new four digit password to verify. If the new passwords match, there will be two short beeps, **Code** will appear for 1 second and then the LCD will return to HOURMETER function.

NOTE: If the new passwords do not match, there will be one long beep and Error will appear for 1 second and then the LCD will return to HOURMETER function.

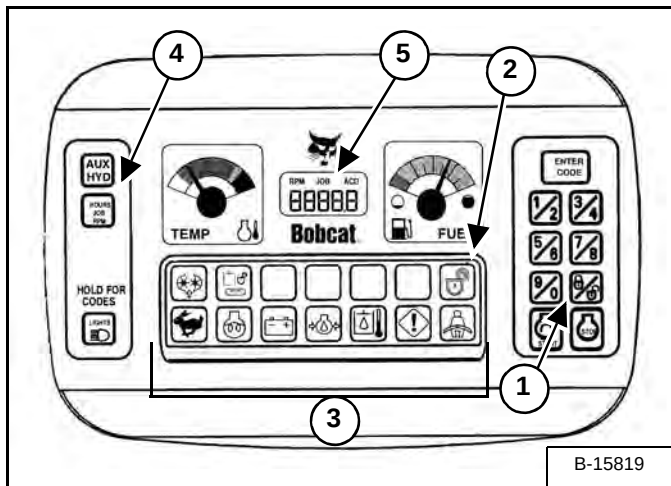
DISPLAY INSTRUMENT PANEL SETUP (CONT'D)

Password Lockout Feature

This allows the operator to Unlock the password feature so that a password does not need to be used every time you start the engine.

Perform Password Entry (See Password Entry (For Starting and Operating the Machine) on Page SA-4.) (the engine can be started or stopped.) The password entry can be performed with the engine off or with the engine running.

Figure SA-2



Press the Lock/Unlock button (Item 1) [Figure SA-2]. The LCD will continuously alternate from **UnLoc** to **Code** for 1 second periods.

Perform Password Entry again.

UnLoc will appear in the LCD (Item 5), the Unlocked Icon (Item 2) will appear in the Icon Display Area (Item 3) [Figure SA-2] and there will be two short beeps.

To start an Unlocked system, press the ENTER CODE button and press the START button.

When you stop the engine with the system unlocked, you will hear one long beep every 3 seconds for 15 seconds.

To lock the system again, press the Lock/Unlock button (Item 1) [Figure SA-2] and enter the password during the 15 second period.

Job Clock

The JOB CLOCK can be set to record accumulated hours for a particular job.

Press and release the HOURS/JOB/RPM button (Item 4) until JOB light is ON at the top, center of the LCD (Item 5) [Figure SA-2].

While the JOB light is ON, press and hold the HOURS/JOB/RPM button (Item 4) [Figure SA-2] until the LCD returns to zero.

This process will clear the accumulated hours and will begin recording JOB CLOCK time again. (This does not affect the HOURMETER which continues to record the total operating hours of the Excavator.)

Pressing the HOURS/JOB/RPM button again or pressing the START button will return the LCD to HOURMETER function.

RPM

The LCD (Item 5) [Figure SA-2] can be set to display engine RPM.

With the engine running, press and release the HOURS/JOB/RPM button (Item 4) until RPM light is ON at the top, center of the LCD (Item 5) [Figure SA-2].

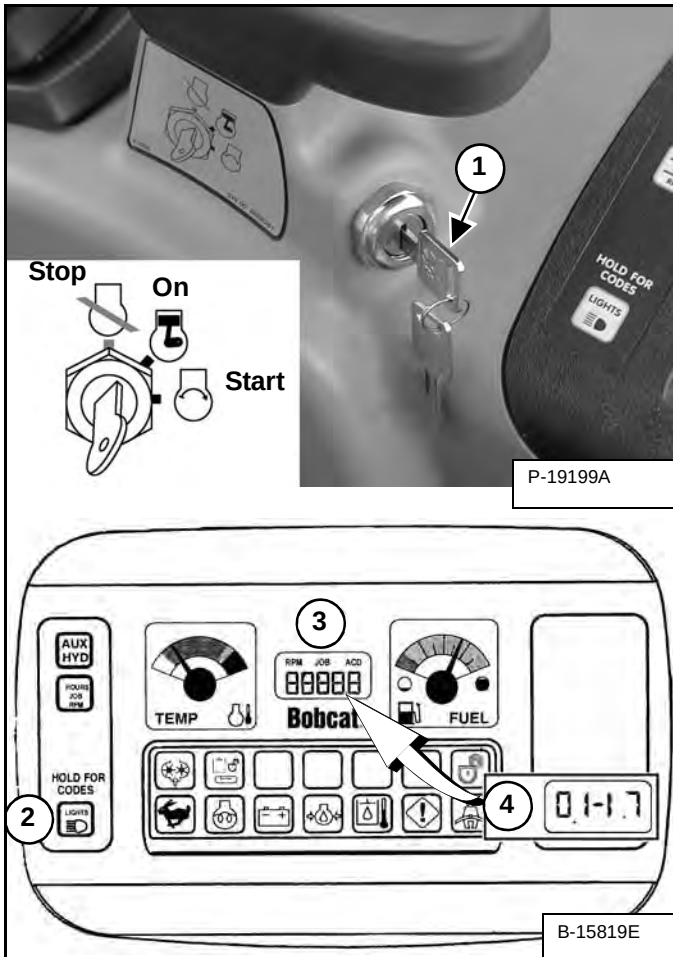
Engine RPM is now displayed in the LCD.

Press the HOURS/JOB/RPM button (Item 4) [Figure SA-2] again the return to HOURMETER function.

DISPLAY CONTROLLER PANEL SETUP (CONT'D)

Viewing Service Codes (Key Switch)

Figure SA-3



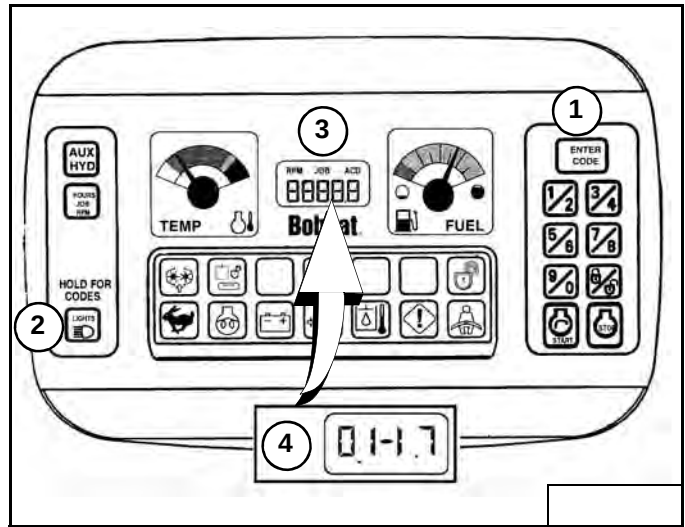
Turn the key switch (Item 1) [Figure SA-3] to the ON position but do not start the engine.

Press and hold the LIGHTS Button (Item 2) for two seconds to view SERVICE CODES in the HOURMETER/CODE DISPLAY (Item 3) [Figure SA-3]. If more than one SERVICE CODE is present, the codes will scroll on the HOURMETER/CODE DISPLAY. (See DIAGNOSTIC SERVICE CODE on Page SA-3.)

NOTE: Corroded or loose grounds can cause multiple service codes and/or abnormal symptoms. All instrument panel lights flashing, alarm sounding and lights flashing, could indicate a bad ground. The same symptoms could apply if the voltage is low, such as loose or corroded battery cables. If you observe these symptoms, check grounds and positive leads first.

Viewing Service Codes (Keyless)

Figure SA-4



Press the enter code button (Item 1) [Figure SA-4] and the display will become lighted and there will be two short beeps.

Press and hold the LIGHTS Button (Item 2) for two seconds to view SERVICE CODES in the HOURMETER/CODE DISPLAY (Item 2) [Figure SA-4]. If more than one SERVICE CODE is present, the codes will scroll on the HOURMETER/CODE DISPLAY. (See DIAGNOSTIC SERVICE CODE on Page SA-3.)

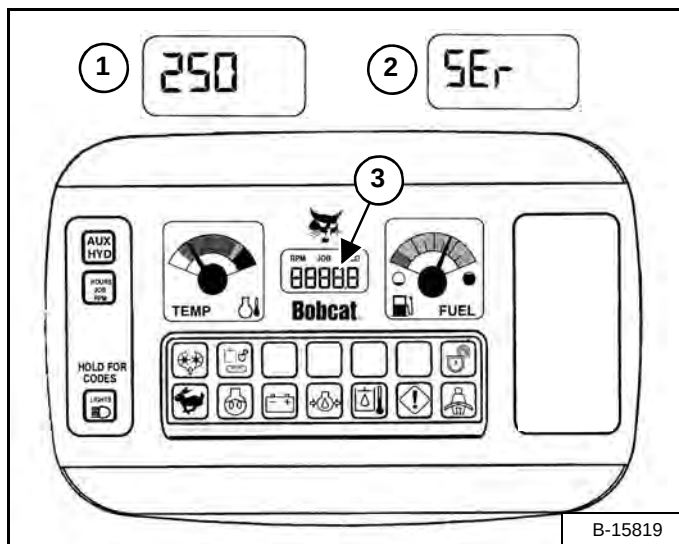
NOTE: Corroded or loose grounds can cause multiple service codes and/or abnormal symptoms. All instrument panel lights flashing, alarm sounding and lights flashing, could indicate a bad ground. The same symptoms could apply if the voltage is low, such as loose or corroded battery cables. If you observe these symptoms, check grounds and positive leads first.

MAINTENANCE CLOCK

Description

The Maintenance Clock alerts the operator when the next service interval is due. *EXAMPLE:* The Maintenance Clock can be set to a 250 hour interval as a reminder for the next 250 hour planned maintenance. (See your Bobcat dealer to activate the maintenance clock feature.)

Figure SA-5



During machine operation, a two beep alarm will sound when there are less than 10 hours until the next planned maintenance.

The hours interval (Item 1) and the **[SEr]** (Item 2) will alternate in the LCD display window (Item 1) **[Figure SA-5]** for ten seconds.

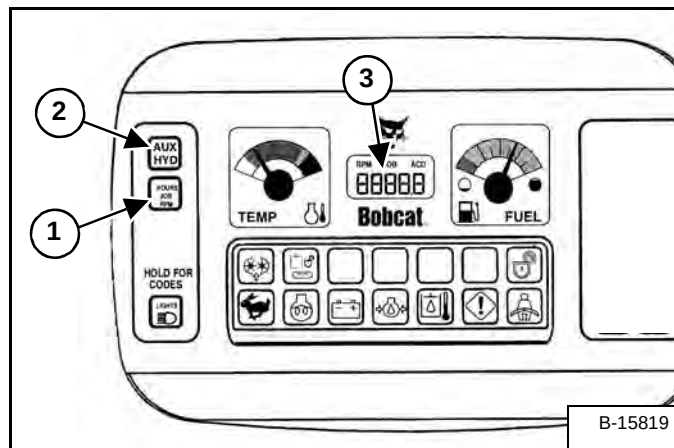
The display will then revert back to the previous display and will appear for ten seconds every time the machine is started until the maintenance clock is reset.

Setup

See your Bobcat dealer about installation of this feature.

Reset

Figure SA-6



To reset the panel after the scheduled maintenance is completed, do the following:

Turn the key to the OFF position or press the stop button (keyless panel).

Press the hours/job/RPM button (Item 1) **[Figure SA-6]** to turn the panel on.

Press and hold the hours/job/RPM button (Item 1) and the auxiliary hydraulic button (Item 2) simultaneously until **[rESEt]** appears in the LCD display window (Item 3) **[Figure SA-6]**.

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MACHINE SIGN TRANSLATIONS

EMERGENCY EXIT (6815984).....	MST-18
JOYSTICK CONTROL PATTERN SELECTOR LEVER (6815957) ..	MST-24
LIFT CHART	MST-4
435 LONG ARM (7107502)	MST-7
435 STANDARD ARM (7107501)	MST-4
SERVICE SCHEDULE (7158257).....	MST-10
WARNING (6576048)	MST-19
WARNING (6804114, 6817225, 6804233)	MST-15
WARNING (6807776)	MST-13
WARNING (6808185)	MST-3
WARNING (6808474)	MST-16
WARNING (6809829)	MST-24
WARNING (6815915)	MST-20
WARNING (6817815)	MST-16
WARNING (7142685)	MST-17
WARNING (7102651)	MST-21

**MACHINE SIGN
TRANSLATIONS**

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Bobcat®

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.	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.

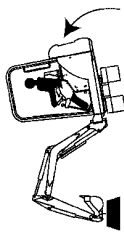
ADVERTENCIA	
Ejecutar procedimientos de carga, transporte y elevación no adecuados puede causar lesiones serias o accidentes fatales.	
TRANSPORTE DE LA MÁQUINA - Utilice rampas de carga metálicas con costados y superficies antideslizantes. - Asegure las rampas a la plataforma de apoyo del camión. - Enganche 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.	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.

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.	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.

WARNING

OVERLOAD CAN TIP THE EXCAVATOR AND CAUSE INJURY OR DEATH

- Do not lift or hold any load that exceeds these ratings at their specified load radii and heights.
- Total rated load is shown. The weight of all lifting devices must be deducted to determine the net load that can be lifted.



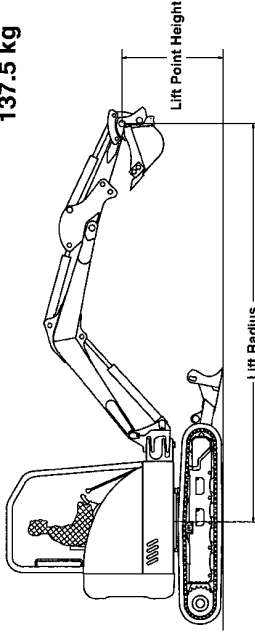
Where applicable, specifications conform to ISO Standards. Specifications are subject to change without notice.

Lift Point is bucket hinge point with standard bucket attached and bucket cylinder fully extended.

EXCAVATOR MODEL 435

CIRCUIT PRESSURES
WORKING 250 bar (3625 psi)
HOLDING 290 bar (4200 psi)

BOOM LENGTH 2642 mm (104.0 in)
ARM LENGTH 1372 mm (54.0 in)
STANDARD BUCKET 609 mm (24.0 in)
137.5 kg (303 lb)



LIFT POINT HEIGHT	RATED LIFT CAPACITY OVER BLADE, BLADE DOWN - kg (lb)			RATED LIFT CAPACITY OVER BLADE, BLADE UP - kg (lb)		
	LIFT RADIUS - mm (in)		LIFT @ MAXIMUM RADIUS, kg (lb) @ mm (in)	LIFT RADIUS - mm (in)		LIFT @ MAXIMUM RADIUS, kg (lb) @ mm (in)
	3000 (118.1)	4000 (157.5)		3000 (118.1)	4000 (157.5)	
3000 (118.1)	*735 (1621)		*794 (1750) @ 4724 (186)			387 (853) @ 4724 (186)
2000 (78.7)	*1198 (2642)	*958 (2111)	*879 (1937) @ 4969 (196)	836 (1844)	495 (1091)	327 (720) @ 4969 (196)
1000 (39.4)	*1893 (4174)	*1208 (2662)	*972 (2142) @ 4984 (196)	763 (1682)	464 (1022)	305 (673) @ 4984 (196)
Ground	*2221 (4895)	*1386 (3055)	*1052 (2319) @ 4754 (187)	713 (1571)	435 (959)	326 (718) @ 4754 (187)
-1000 (-39.4)	*2174 (4794)	*1366 (3012)	*1157 (2552) @ 4270 (168)	713 (1571)	443 (977)	412 (909) @ 4270 (168)

* Rated Hydraulic Lift Capacity

60667

SW 04 7107501

ADVERTENCIA

UNA SOBRECARGA PUEDE LADEAR LA EXCAVADORA Y CAUSAR LESIONES O ACCIDENTES FATALES

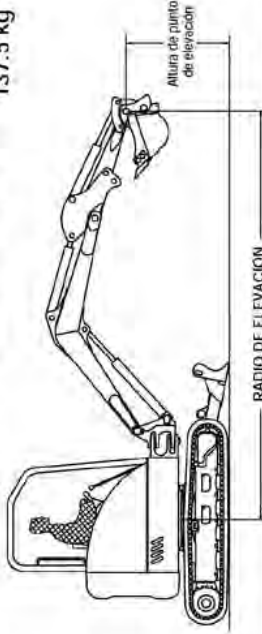
- No eleve o sostenga una carga que exceda estos límites funcionales en sus radios de carga y altura especificados
- Se muestra la carga nominal total. El peso de todos los dispositivos de elevación debe deducirse para determinar la carga neta que se puede elevar.



Donde corresponda, las especificaciones cumplen los estándares ISO. Las especificaciones están sujetas a cambios sin previo aviso. El punto de elevación es el punto de articulación del cucharón con el cucharón estándar acoplado y el cilindro del cucharón totalmente extendido.

EXCAVADORA MODELO 435

LARGO DEL "BOOM" 2642 mm (104.0 pulg.)
 LARGO DEL BRAZO 1372 mm (54.0 pulg.)
 CUCARÓN ESTÁNDAR 609 mm (24.0 pulg.)
 137.5 kg (303 lb)



ALTURA DE PUNTO DE ELEV. mm (in.)	CAPACIDAD DE ELEV. NOMINAL SOBRE LA PALA, PALA ABAJO- kg (lb)			CAPACIDAD DE ELEV. NOMINAL SOBRE LA PALA, PALA ABAJO - kg (lb.)			CAPACIDAD DE ELEV. NOMINAL SOBRE EL COSTADO, PALA ARRIBA - kg. (lb.)		
	RADIO DE ELEVACIÓN - mm (in)			RADIO DE ELEVACIÓN - mm (in)			RADIO DE ELEVACIÓN - mm (in)		
	3000 (118.1)	4000 (157.5)	ELEVACIÓN @ RADIO MAXIMO, kg (lb) @ mm (in)	3000 (118.1)	4000 (157.5)	ELEVACIÓN @ RADIO MAXIMO, kg (lb) @ mm (in)	3000 (118.1)	4000 (157.5)	ELEVACIÓN @ RADIO MAXIMO, kg (lb) @ mm (in)
3000 (118.1)		*735 (1621)	*794 (1750) @ 4724 (186)		*681 (1501)	472 (1040) @ 4724 (186)		519 (1145)	387 (853) @ 4724 (186)
2000 (78.7)	*1198 (2642)	*958 (2111)	*879 (1937) @ 4969 (196)	*1142 (2519)	629 (1386)	395 (872) @ 4969 (196)	836 (1844)	495 (1091)	327 (720) @ 4969 (196)
1000 (39.4)	*1893 (4174)	*1208 (2662)	*972 (2142) @ 4984 (196)	986 (2173)	594 (1310)	379 (835) @ 4984 (196)	763 (1682)	464 (1022)	305 (673) @ 4984 (196)
Tierra	*2221 (4895)	*1386 (3055)	*1052 (2319) @ 4754 (187)	947 (2087)	562 (1239)	401 (885) @ 4754 (187)	713 (1571)	435 (959)	326 (718) @ 4754 (187)
-1000 (-39.4)	*2174 (4794)	*1366 (3012)	*1157 (2552) @ 4270 (168)	943 (2080)	567 (1251)	511 (1127) @ 4270 (168)	713 (1571)	443 (977)	412 (909) @ 4270 (168)

* Capacidad de elevación nominal hidráulica

60667

SW 04 7107501 AR

Dealer Copy -- Not for Resale

WARNING

OVERLOAD CAN TIP THE EXCAVATOR
AND CAUSE INJURY OR DEATH

Do not lift or hold any load that exceeds these ratings at their specified load radii and height.

Total rated load is shown. The weight of all lifting devices must be deducted to determine the net load that can be lifted.



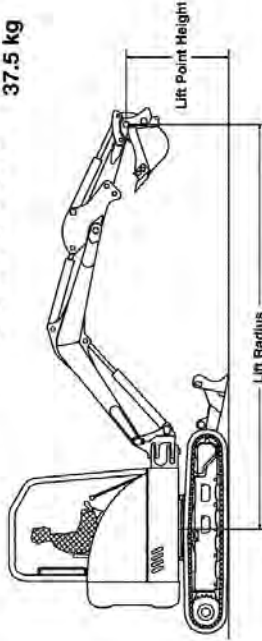
Where applicable, specifications conform to ISO Standards. Specifications are subject to change without notice. Lift Point is bucket hinge point with standard bucket attached and bucket cylinder fully extended.

EXCAVATOR MODEL 435 EQUIPPED WITH LONG ARM

CIRCUIT PRESSURES

WORKING 250 bar (3625 psi)
HOLDING 290 bar (4200 psi)

BOOM LENGTH 2400 mm (94.5 in)
ARM LENGTH 1722 mm (67.8 in)
COUNTERWEIGHT 87 kg (192 lb)
STANDARD BUCKET 609 mm (24.0 in)
37.5 kg (83 lb)



LIFT POINT HEIGHT	RATED LIFT CAPACITY OVER BLADE, BLADE DOWN - kg (lb.)			RATED LIFT CAPACITY OVER BLADE, BLADE UP - kg (lb.)			RATED LIFT CAPACITY OVER SIDE, BLADE UP - kg (lb.)		
	LIFT RADIUS - mm (in.)			LIFT RADIUS - mm (in.)			LIFT RADIUS - mm (in.)		
	3000 (118.1)	4000 (157.5)	5000 (196.9)	3000 (118.1)	4000 (157.5)	5000 (196.9)	3000 (118.1)	4000 (157.5)	5000 (196.9)
3000 (118.1)			*697 (1536)			417 (919)			340 (749)
2000 (78.7)		*807 (1779)	*766 (1688)		641 (1414)	407 (898)		527 (1163)	327 (720)
1000 (39.4)	*1556 (3430)	*1061 (2339)	*868 (1914)	999 (2203)	602 (1328)	391 (863)	795 (1753)	484 (1067)	309 (681)
Ground	*1984 (4374)	*1286 (2834)	*960 (2116)	935 (2061)	572 (1260)	374 (824)	763 (1682)	461 (1016)	293 (645)
-1000 (-39.4)	*2116 (4666)	*1352 (2980)		940 (2072)	558 (1230)		725 (1598)	449 (990)	
			*1028 (2266) @ 4626 (182)			435 (960) @ 4626 (182)			343 (755) @ 4626 (182)

* Rated Hydraulic Lift Capacity

60667

SW 04 7107502

ADVERTENCIA

UNA SOBRECARGA PUEDE LADEAR
LA EXCAVADORA Y CAUSAR LESIONES
O ACCIDENTES FATALES

- No eleve o sostenga una carga que exceda estos límites funcionales en sus radios de carga y altura especificados
- Se muestra la carga nominal total. El peso de todos los dispositivos de elevación debe deducirse para determinar la carga neta que se puede elevar.

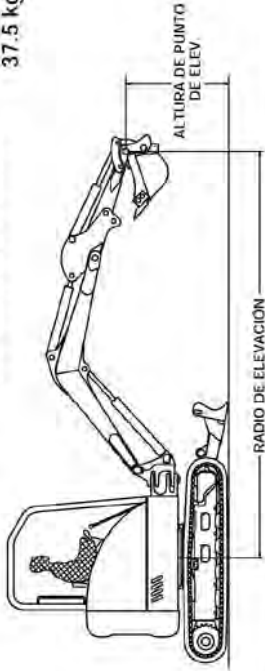


Donde corresponda, las especificaciones cumplen los estándares ISO. Las especificaciones están sujetas a cambios sin previo aviso. El punto de elevación es el punto de articulación del cucharón con el cucharón estándar acoplado y el cilindro del cucharón totalmente extendido.

EXCAVADORA MODELO 435 EQUIPADA CON BRAZO LARGO

PRESIONES DE CIRCUITO
TRABAJO 250 bar (3625 psi)
RETENCIÓN 290 bar (4200 psi)

LARGO DEL "BOOM"
2400 mm (94.5 in)
LARGO DEL BRAZO
1722 mm (67.8 in)
CONTRAPESO
87 kg (192 lb)
CUCHARÓN ESTÁNDAR
609 mm (24.0 in)
37.5 kg (83 lb)



ALTURA DE PUNTO DE ELEV.	CAPACIDAD DE ELEV. NOMINAL SOBRE LA PALA, PALA ABAJO – kg. (lb.)			CAPACIDAD DE ELEV. NOMINAL SOBRE EL COSTADO, PALA ARRIBA – kg. (lb.)		
	RADIO DE ELEVACIÓN - mm (pulg.)			RADIO DE ELEVACIÓN - mm (pulg.)		
	3000 (118.1)	4000 (157.5)	5000 (196.9)	3000 (118.1)	4000 (157.5)	5000 (196.9)
3000 (118.1)	*697 (1536)	*697 (1536)	*697 (1536)	417 (919)	417 (919)	417 (919)
2000 (78.7)	*807 (1779)	*766 (1688)	*775 (1708)	360 (793)	327 (720)	327 (720)
1000 (39.4)	*1556 (3430)	*1061 (2339)	*868 (1914)	347 (765)	295 (653)	295 (653)
Suelo	*1984 (4374)	*1286 (2834)	*960 (2116)	361 (795)	293 (645)	293 (645)
-1000 (-39.4)	*2116 (4666)	*1352 (2980)	*1028 (2266)	435 (960)	449 (990)	449 (990)

* Capacidad de elevación nominal hidráulica

SW 04 7107502 AR

60667

AVERTISSEMENT

TOUTE SURCHARGE PEUT FAIRE BASCULER LA PELLE ET PROVOQUER DES BLESSURES GRAVES, VOIRE MORTELLES

- Ne jamais lever ni porter de charges qui dépassent ces capacités au rayon et à la hauteur spécifiés.
- Le chiffre indiqué représente la charge nominale totale. Le poids des équipements de levage doit être déduit pour calculer la charge nette de levage possible.

Dans la mesure du possible, les caractéristiques sont conformes aux normes ISO. Elles sont susceptibles d'être modifiées sans préavis. Le point de levage est le pivot du godet avec godet standard installé et vérin de godet complètement étendu.

PELLE MODELE 435

**PRESSIION DES CIRCUITS
EN EFFORT 250 bar
EN MAINTIEN 290 bar**

**LONGUEUR DE LA FLECHE
LONGUEUR DU BRAS
GODET STANDARD**

HAUTEUR
DU
POINT
DE
LEVAGE

AU DESSUS DE LA LAME, LAME BAISSEE - kg

RAYON DE LEVAGE - mm

mm

3000

2000

1000

Sol

-1000

LEVAGE AU
RAYON
MAXIMUM,
kg /
mm

*794 /
4724

*879 /
4969

*972 /
4904

*1062 /
4754

*1157 /
4270

RAYON DE LEVAGE - mm

3000

*681

629

594

562

567

LEVAGE AU
RAYON
MAXIMUM,
kg /
mm

472 /
4724

395 /
4969

379 /
4984

401 /
4754

511 /
4270

RAYON DE LEVAGE - mm

3000

519

495

464

435

443

LEVAGE AU
RAYON
MAXIMUM,
kg /
mm

387 /
4724

327 /
4969

305 /
4984

326 /
4754

412 /
4270

80667

* Capacité de levage hydraulique

GT-05-7107501-FR

* Service only when machine is equipped with this item.

■ Service at first 50 hours, then as scheduled.

▲ Service at first 100 hours, then as scheduled.

EVERY 8-10 HOURS

Check engine coolant level.

Check engine oil level.

Check hydraulic fluid level.

Check air cleaner condition indicator

Check and adjust track tension.

Check indicator lights for correct operation.

Check canopy or *cab condition and mounting hardware.

Check seat belt condition and mounting hardware.

Check control console(s) lockout for proper operation.

Check for damaged signs (decals) - Replace as needed.

Grease all machinery pivot points. (See illustrations)

*Apply grease to slide on extendable arm.

*Clean cab heater filter

EVERY 50 HOURS

Grease swing pinion and swing circle. (See illustrations)

Drain water and sediment from fuel tank and fuel filter.

Check battery, cables and electrolyte level.

EVERY 100 HOURS

■ Check and adjust belt(s) if required. (Models 323, 325, 328 and 329)

Spark Arrestor Muffler - Clean spark chamber.

EVERY 250 HOURS

Replace engine oil and filter. (Models 325, 328, 329 and 425)

■ Replace inline diesel fuel filter. (Models 425, 430 and 435)

■ Replace diesel fuel filter.

Check oil level in both final drive cases.

EVERY 500 HOURS

■ Replace engine oil and filter. (Models 323, 331, 331E, 334, 335, 337, 341, 430 and 435)

Clean radiator, oil cooler and *A/C condenser.

▲ Check and adjust drive belts and idlers. Replace as needed. (Models 331, 331E, 334, 335, 337, 341, 425, 430 and 435)

▲ Replace primary hydraulic filter and reservoir breather.

▲ Replace case drain hydraulic filter. (Models 325, 328, 329, 331, 334, 331E, 335, 337, 341, 425, 430 and 435)

▲ Replace fan hydraulic filter. (Models 430 and 435)

▲ Check alternator and starter connections.

Check and adjust engine valve clearance.

EVERY 1000 HOURS OR EVERY 12 MONTHS

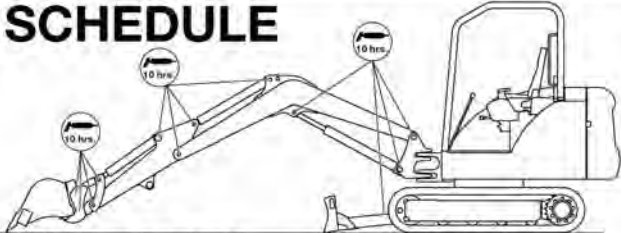
▲ Replace oil in both final drive cases.

Replace hydraulic fluid and filter(s).

EVERY 2 YEARS

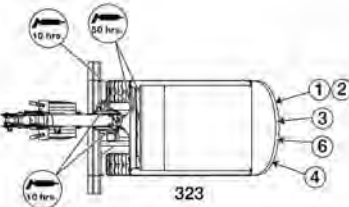
Drain and flush cooling system - Replace coolant.

SERVICE SCHEDULE

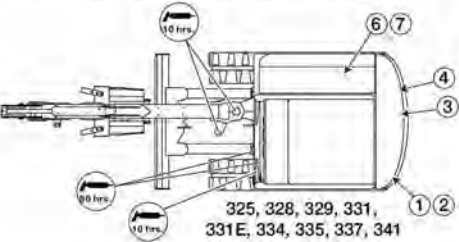


Machine shown in position to check hydraulic fluid levels.

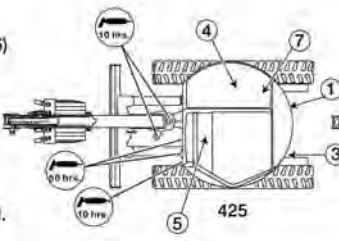
323, 325, 328, 329, 331, 331E, 334, 335, 337, 341, 425, 430, 435



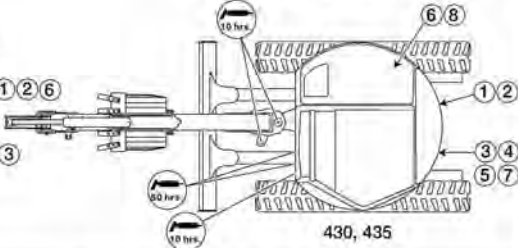
323



325, 328, 329, 331, 331E, 334, 335, 337, 341



425



430, 435

FILTER CHART							
	323	325, 328, 329	331, 334, 331E, 335	337, 341	425	430	435
1. PRIMARY AIR FILTER	6673752	6672467	6666333	6666375	6672467	6666333	6666375
2. SECONDARY AIR FILTER	6673753	6672468	6666334	6666376	6672468	6666334	6666376
3. ENGINE OIL FILTER	6671057	6675517	6675517	6675517	6657635	6675517	6675517
4. FUEL FILTER	6667352	6667352	6667352	6667352	6667352	6667352	6667352
5. INLINE FUEL FILTER	N/A	N/A	N/A	N/A	6633977	6633977	6633977
6. PRIMARY HYDRAULIC FILTER	6653336	6661248	6661248	6670207	6661248	6668819	6668819
7. DRAIN HYDRAULIC FILTER	N/A	6516722	6516722	6516722	6661022	6681012	6681012
8. FAN HYDRAULIC FILTER	N/A	N/A	N/A	N/A	N/A	6681012	6681012

* See illustrations above for filter locations.

IMPORTANT

THIS MACHINE IS FACTORY EQUIPPED WITH A U.S.D.A. FORESTRY SERVICE APPROVED SPARK ARRESTOR MUFFLER.

IT IS NECESSARY TO CLEAN THIS SPARK ARRESTOR MUFFLER TO KEEP IT IN WORKING CONDITION. THE SPARK ARRESTOR MUFFLER MUST BE SERVICED BY DUMPING THE SPARK CHAMBER EVERY 100 HOURS OF OPERATION.

[IF THIS MACHINE IS OPERATED ON FLAMMABLE FOREST, BRUSH OR GRASS COVERED LAND, IT MUST BE EQUIPPED WITH A SPARK ARRESTOR ATTACHED TO THE EXHAUST SYSTEM AND MAINTAINED IN WORKING ORDER. FAILURE TO DO SO WILL BE IN VIOLATION OF CALIFORNIA STATE LAW, SECTION 4442. PRC.

REFER TO LOCAL LAWS AND REGULATIONS FOR SPARK ARRESTOR REQUIREMENTS.

• See Operation & Maintenance Manual for more information and instructions.

71649 SW 7158257 enUS

- * Entretien uniquement pour les machines qui en sont équipées.
 ■ Effectuez l'entretien après 50 heures, puis selon le tableau.
 ▲ Effectuez l'entretien après 100 heures, puis selon le tableau.

TABLEAU DES ENTRETIENS

TOUTES LES 8-10 HEURES D'UTILISATION

- ✓ Vérifiez le niveau du liquide de refroidissement.
- ✓ Vérifiez le niveau d'huile moteur.
- ✓ Vérifiez le niveau du fluide hydraulique.
- ✓ Vérifiez l'indicateur d'état du filtre à air.
- ✓ Vérifiez et réglez la tension des chenilles.
- ✓ Vérifiez le bon fonctionnement des témoins lumineux.
- ✓ Vérifiez l'état du toit de protection ou de la cabine* et de leurs fixations.
- ✓ Vérifiez l'état de la ceinture de sécurité et de ses fixations.
- ✓ Vérifiez le bon fonctionnement du verrouillage du ou des tableaux de commande.
- ✓ Vérifiez que les autocollants ne sont pas abîmés - Remplacez-les au besoin.
- ✓ Vérifiez tous les points pivots de la machine. (Consultez les illustrations)
- *Graisiez la partie coulissante du bras extensible.
- *Nettoyez le filtre du chauffage de la cabine.

TOUTES LES 50 HEURES D'UTILISATION

- Graissez le pignon et le cercle d'orientation. (Consultez les illustrations)
- Purgez le réservoir de carburant et le filtre d'alimentation de l'eau et des sédiments.
- ✓ Vérifiez la batterie, les câbles et le niveau d'électrolyte.

TOUTES LES 100 HEURES D'UTILISATION

- Vérifiez et réglez la (les) courroie(s) au besoin. (Modèles 323, 325, 328 et 329)
- Silencieux pare-étincelles - Videz la chambre à étincelles.

TOUTES LES 250 HEURES D'UTILISATION

- Remplacez l'huile et le filtre à huile moteur. (Modèles 325, 328, 329 et 425)
- Remplacez le filtre intégré à la conduite du carburant diesel. (Modèles 425, 430 et 435)
- Remplacez le filtre du carburant diesel.
- ✓ Vérifiez le niveau d'huile dans les deux carters de réduction finale.

TOUTES LES 500 HEURES D'UTILISATION

- Remplacez l'huile et le filtre à huile moteur. (Modèles 323, 331, 331E, 334, 335, 337, 341, 430 et 435)
 - Nettoyez le radiateur, le refroidisseur d'huile et le condenseur de la climatisation*.
 - ▲ Vérifiez et réglez les courroies d'entraînement et les roues de tension. Remplacez-les au besoin. (Modèles 331, 331E, 334, 335, 337, 341, 425, 430 et 435)
 - ▲ Remplacez le filtre hydraulique primaire et le reniflard de réservoir.
 - ▲ Remplacez le filtre hydraulique du retour de carter. (Modèles 325, 328, 329, 331, 334, 331E, 335, 337, 341, 425, 430 et 435)
 - ▲ Remplacez le filtre hydraulique du ventilateur. (Modèles 430 et 435)
 - ▲ Vérifiez les connexions de l'alternateur et du démarreur.
 - ✓ Vérifiez et réglez le jeu des soupapes du moteur.
- TOUTES LES 1000 HEURES OU TOUTES LES 12 MOIS
- ▲ Remplacez l'huile dans les deux carters de réduction finale.
 - Remplacez le fluide et le(s) filtre(s) hydrauliques.
- TOUTES LES 2 ANS
- ✓ Videz et rincez le circuit de refroidissement - Remplacez le liquide de refroidissement.

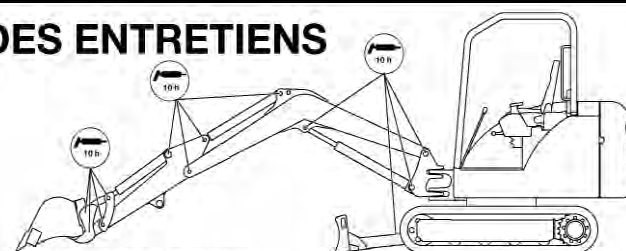
IMPORTANT

CETTE MACHINE EST ÉQUIPÉE EN USINE D'UN SILENCIEUX PARE-ÉTINCELLES APPROUVÉ PAR LE SERVICE DES FORÊTS DES ÉTATS-UNIS (U.S.D.A. FORESTRY SERVICE).

IL EST INDISPENSABLE DE NETTOYER CE SILENCIEUX AFIN DE LE MAINTENIR EN BON ÉTAT DE FONCTIONNEMENT. CET ENTRETIEN CONSISTE À VIDER LA CHAMBRE À ÉTINCELLES TOUTES LES 100 HEURES D'UTILISATION.

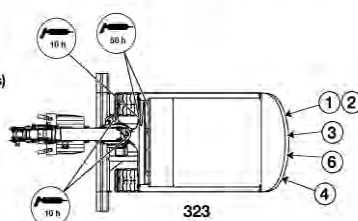
SI CETTE MACHINE EST UTILISÉE EN ZONE DE FORÊTS, DE BROUSSAILLES OU D'HERBAGES PRÉSENTANT DES RISQUES D'INCENDIE, ELLE DOIT ÊTRE ÉQUIPÉE D'UN PARE-ÉTINCELLES AJOUTÉ AU CIRCUIT D'ÉCHAPPEMENT ET MAINTENU EN BON ÉTAT DE MARCHÉ. LE NON RESPECT DE CETTE OBLIGATION CONTREVIENT À LA LOI DE L'ÉTAT DE CALIFORNIE, SECTION 4442. PRC.

AUX RÉGLEMENTATIONS LOCALES POUR LES EXIGENCES APPLICABLES DANS VOTRE CAS EN MATIÈRE DE PARE-ÉTINCELLES.

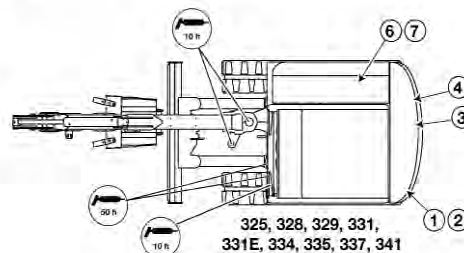


Disposition de la machine pour la vérification des niveaux de fluide hydraulique.

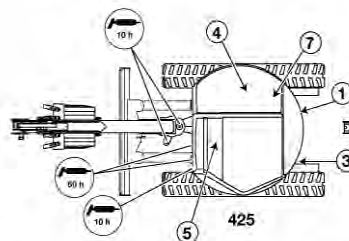
323, 325, 328, 329, 331, 331E, 334, 335, 337, 341, 425, 430, 435



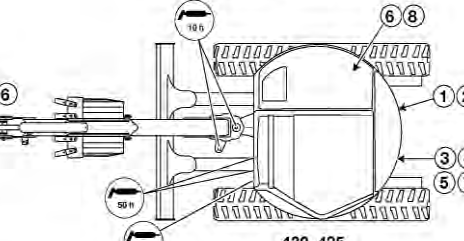
323



325, 328, 329, 331, 331E, 334, 335, 337, 341



425



430, 435

TABLEAU DES FILTRES

	323	325, 328, 329	331, 334, 331E, 335	337, 341	425	430	435
1. FILTRE À AIR PRIMAIRE	6673752	6672467	6666333	6666375	6672467	6666333	6666375
2. FILTRE À AIR SECONDAIRE	6673753	6672468	6666334	6666376	6672468	6666334	6666376
3. FILTRE À HUILE MOTEUR	6671057	6675517	6675517	6675517	6657635	6675517	6675517
4. FILTRE À CARBURANT	6667352	6667352	6667352	6667352	6667352	6667352	6667352
5. FILTRE D'ALIMENTATION INTÉGRÉ	S. O.	S. O.	S. O.	S. O.	6633977	6633977	6633977
6. FILTRE HYDRAULIQUE PRIMAIRE	6653336	6661248	6661248	6670207	6661248	6668819	6668819
7. FILTRE HYDRAULIQUE DU RETOUR DE CARTER	S. O.	6516722	6516722	6516722	6661022	6681012	6681012
8. FILTRE HYDRAULIQUE DU VENTILATEUR	S. O.	S. O.	S. O.	S. O.	S. O.	6681012	6681012

* Consultez les illustrations ci-dessus pour les emplacements de filtres

• Consultez le manuel d'utilisation et d'entretien pour des instructions et informations supplémentaires

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* Realice un servicio únicamente cuando la máquina esté equipada con este elemento.

■ Realice un servicio después de las primeras 50 horas, y luego, según el programa.

▲ Realice un servicio después de las primeras 100 horas, y luego, según el programa.

CADA 8-10 HORAS

Controle el nivel de refrigerante del motor.

Controle el nivel de aceite del motor.

Controle el nivel de fluido hidráulico.

Controle el indicador de estado del depurador de aire.

Controle y ajuste la tensión de la banda de rodamiento.

Controle que las luces del indicador funcionen correctamente.

Controle el estado del techo o de la cabina*, y los herrajes de montaje.

Controle el estado del cinturón de seguridad y los herrajes de montaje.

Controle que el bloqueo de la consola o las consolas de control funcione correctamente.

Controle que no haya carteles (etiquetas) dañados - Cambie según sea necesario.

Engrase todos los puntos de los pivotes de la maquinaria. (Consulte las ilustraciones)

*Aplique grasa para deslizar sobre el brazo extensible.

*Limpie el filtro del calefactor de la cabina.

CADA 50 HORAS

Engrase el piñón de giro y el círculo de giro. (Consulte las ilustraciones)

Drene el agua y los sedimentos del tanque de combustible y del filtro de combustible.

Controle la batería, los cables y el nivel de electrolito.

CADA 100 HORAS

■ Controle y ajuste la correa o las correas si fuera necesario. (Modelos 323, 325, 328 y 329)

Silenciador parachispas - Limpie la cámara de chispas.

CADA 250 HORAS

■ Cambie el aceite y el filtro del motor. (Modelos 325, 328, 329 y 425)

■ Cambie el filtro de combustible diésel de entrada. (Modelos 425, 430 y 435)

■ Cambie el filtro de combustible diésel.

Controle el nivel de aceite en las cajas de transmisión de ambos extremos.

CADA 500 HORAS

■ Cambie el aceite y el filtro del motor. (Modelos 323, 331, 331E, 334, 335, 337, 341, 430 y 435)

Limpie el radiador, el refrigerante de aceite y el *condensador del acondicionador de aire.

▲ Controle y ajuste las correas impulsoras y las guías. Cambie según sea necesario. (Modelos 331, 331E, 334, 335, 337, 341, 425, 430 y 435)

▲ Cambie el filtro hidráulico primario y el respiradero del depósito.

▲ Cambie el filtro hidráulico de purga de la caja. (Modelos 325, 328, 329, 331, 334, 331E, 335, 337, 341, 425, 430 y 435)

▲ Cambie el filtro hidráulico del ventilador. (Modelos 430 y 435)

▲ Controle el alternador y las conexiones del arrancador.

Controle y ajuste la holgura de las válvulas del motor.

CADA 1000 HORAS O CADA 12 MESES

▲ Cambie el aceite en las cajas de transmisión de ambos extremos.

Cambie el fluido hidráulico y el filtro o los filtros.

CADA 2 AÑOS

Purgue y enjuague el sistema de enfriamiento - Cambie el refrigerante.

PROGRAMA PARA EL SERVICIO DE MANTENIMIENTO

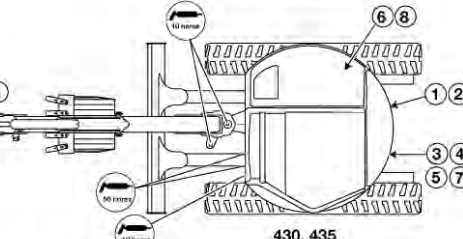
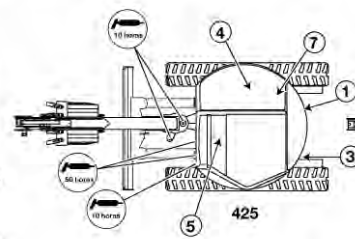
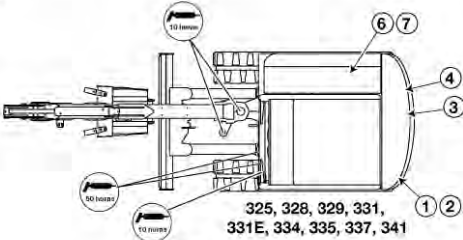
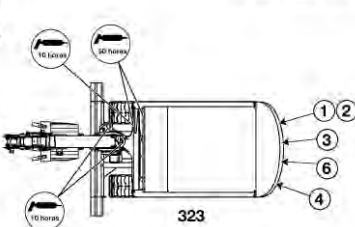
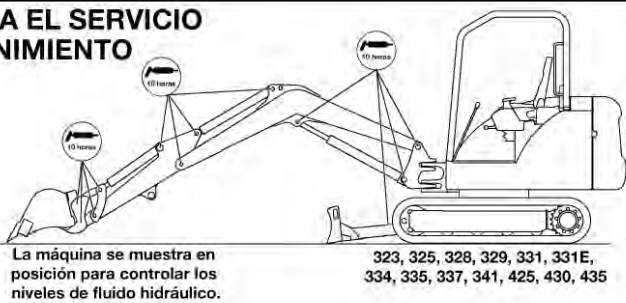


TABLA DE FILTROS

	323	325, 328, 329	331, 334, 331E, 335	337, 341	425	430	435
1. FILTRO DE AIRE PRIMARIO	6673752	6672467	6666333	6666375	6672467	6666333	6666375
2. FILTRO DE AIRE SECUNDARIO	6673753	6672468	6666334	6666376	6672468	6666334	6666376
3. FILTRO DE ACEITE DEL MOTOR	6671057	6675517	6675517	6675517	6657635	6675517	6675517
4. FILTRO DE COMBUSTIBLE	6667352	6667352	6667352	6667352	6667352	6667352	6667352
5. FILTRO DE COMBUSTIBLE DE ENTRADA	N/C	N/C	N/C	N/C	6633977	6633977	6633977
6. FILTRO HIDRAULICO PRIMARIO	6653336	6661248	6661248	6670207	6661248	6668819	6668819
7. FILTRO HIDRAULICO DE PURGA	N/C	6516722	6516722	6516722	6661022	6681012	6681012
8. FILTRO HIDRAULICO DEL VENTILADOR	N/C	N/C	N/C	N/C	N/C	6681012	6681012

* Consulte las ilustraciones de arriba para conocer las ubicaciones de los filtros.

IMPORTANTE

LA MÁQUINA VIENE EQUIPADA DE FÁBRICA CON UN SILENCIADOR PARACHISPAS APROBADO POR EL SERVICIO FORESTAL DEL U.S.D.A. (DEPARTAMENTO DE AGRICULTURA DE LOS ESTADOS UNIDOS).

ES NECESARIO LIMPIAR ESTE SILENCIADOR PARACHISPAS PARA MANTENERLO EN BUENAS CONDICIONES. SE DEBE REALIZAR EL SERVICIO DE MANTENIMIENTO DEL SILENCIADOR PARACHISPAS CADA 100 HORAS DE FUNCIONAMIENTO VACIANDO LA CÁMARA DE CHISPAS.

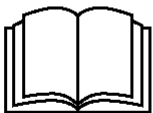
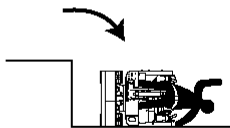
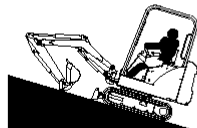
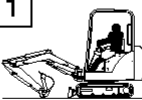
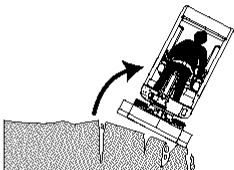
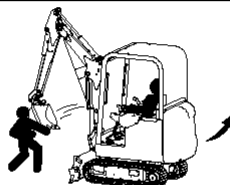
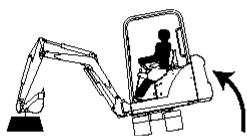
SI LA MÁQUINA SE UTILIZA EN BOSQUES INFLAMABLES, O EN SUPERFICIES CUBIERTAS POR MALEZA O PASTO, DEBE ESTAR EQUIPADA CON UN PARACHISPAS COLOCADO EN EL SISTEMA DE ESCAPE, QUE DEBE FUNCIONAR PERFECTAMENTE. EL INCUMPLIMIENTO DE LO EXPRESADO ANTERIORMENTE CONSTITUYE UNA VIOLACIÓN A LA LEY DEL ESTADO DE CALIFORNIA, SECCIÓN 4442 DEL CÓDIGO DE RECURSOS PÚBLICOS.

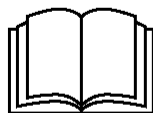
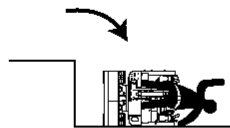
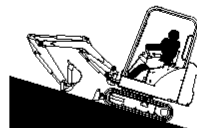
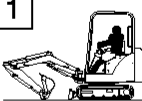
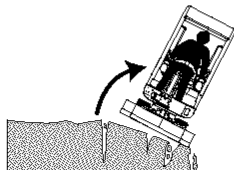
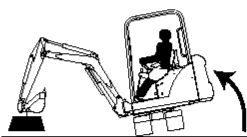
CONSULTE LOS REQUISITOS PARA PARACHISPAS EN LAS LEYES Y REGULACIONES LOCALES.

• Consulte el Manual de Funcionamiento y Mantenimiento para obtener más información e instrucciones.

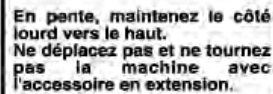
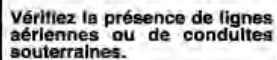
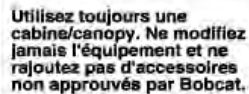


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 WARNING				
AVOID INJURY OR DEATH				
 Never use Excavator without instructions. Read Operation and Maintenance Manual and Handbook.	 Always use cab/canopy. Never modify equipment or use attachments not approved by Bobcat Company.	 Check for overhead or underground lines before operating.	 On slopes, keep heavy end uphill. Do not travel or turn with attachment extended.	TO LEAVE THE EXCAVATOR: 1  Lower attachment. Never park with tracks pointed down hill. 2  Stop the engine. Raise control console.
 Fasten seat belt securely. Keep feet and hands on controls. Operate controls only from operator's position. 42088	 Keep away from drop-offs. Avoid steep areas or banks that could break away.	 Keep bystanders away. No riders. Check location of blade for direction of travel before moving steering controls.	 When swinging loads: ● Keep load low. ● Swing slowly. ● Do not exceed lift capacity. Read lift capacity chart.	Weitere Instruktionen finden sie in der Bedienungsanleitung. Consulte el Manual del Operador par mas instrucciones. Se reporter au manual de l'opérateur pour plus de renseignements. SW 01 6807776

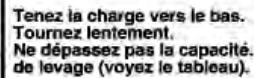
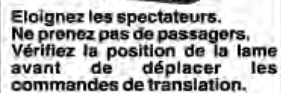
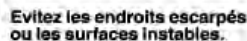
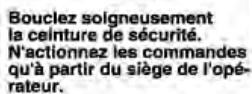
 ADVERTENCIA				
EVITE LESIONES OR ACCIDENTES FATALES				
 Jamás utilice la Excavadora sin leer las instrucciones previamente. Lea el Manual de operación y mantenimiento y el Manual del Operador.	 Utilice siempre la cabina/cubierta. Jamás modifique los equipos o utilice implementos no aprobados por Bobcat Company.	 Verifique la presencia de líneas aéreas y subterráneas antes de operar.	 En pendiente, mantenga el extremo pesado cuesta arriba.	ANTES DE BAJARSE DE LA EXCAVADORA: 1  Bajo el implemento. Jamás estacione la unidad con las orugas mirando cuesta abajo. 2  Detenga el motor. Levante la consola de control.
 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	 Manténgase alejado de pendientes perpendiculares. Evite áreas muy inclinadas o bancos desprendibles.	 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.	 Cuando gire cargas: ● Mantenga la carga abajo. ● Gire lentamente. ● No exceda la capacidad de elevación. Lea la tabla de capacidad de elevación.	Weitere Instruktionen finden sie in der Bedienungsanleitung. Consulte el Manual del operador para obtener mayores instrucciones. Se reporter au manual de l'opérateur pour plus de renseignements. SW 01 6807776 AR

EVITER LES BLESSURES OU LA MORT



**Abaissez
l'accessoire.
Ne stationnez
jamais chenil-
les vers le
bas.**

Relevez la
e de commande.



Voir Manuel de l'Opérateur et d'Entretien pour plus de renseignements.

DV-00-6807776-FR

⚠ WARNING	
	HIGH PRESSURE GREASE CAN CAUSE SERIOUS INJURY • Do not loosen grease fitting. • Do not loosen bleed fitting more than 1-1/2 turns.
	39894 SW 98 6804114

⚠ ADVERTENCIA	
	LA GRASA A ALTA PRESIÓN PUEDE CAUSAR LESIONES GRAVES • No afloje la grasea. • No afloje el drenaje de la grasea en más de 1-1/2 vueltas.
	39894 SW 01 6804114 AR

⚠ AVERTISSEMENT	
	LA GRAISSE SOUS HAUTE PRESSION PEUT CAUSER DES BLESSURES GRAVES • Ne desserrez pas le graisseur. • Ne desserrez pas le purgeur de plus de 1-1/2 tour.
	39894 DV-99-6804114-FR

⚠ WARNING	
	• Hot surfaces can cause serious injury. • Do not touch. • Allow to cool before servicing.
	43820 SW 03 6817225

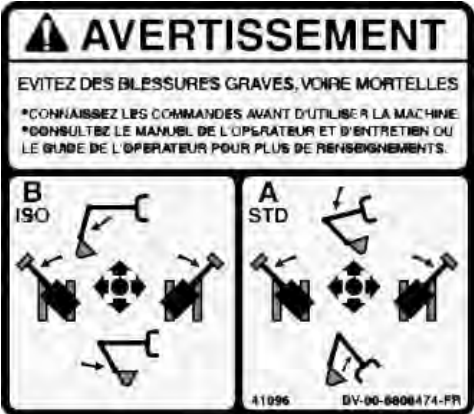
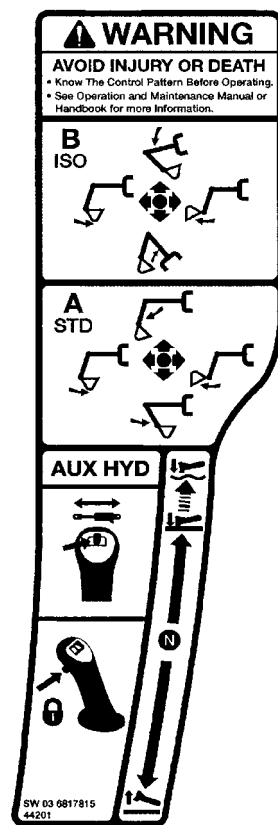
⚠ ADVERTENCIA	
	• Las superficies calientes pueden provocar lesiones graves. • No las toque. • Permita que se enfren antes de dar servicio.
	43820 SW 03 6817225 AR

⚠ AVERTISSEMENT	
	• Les surfaces brûlantes peuvent provoquer des blessures graves. • Ne pas toucher. • Laisser refroidir avant toute opération d'entretien.
	43820 G7-6817225-FR

⚠ WARNING	
• Hot pressurized fluid. • Can cause serious burns.	
39894	SW 98 6804233

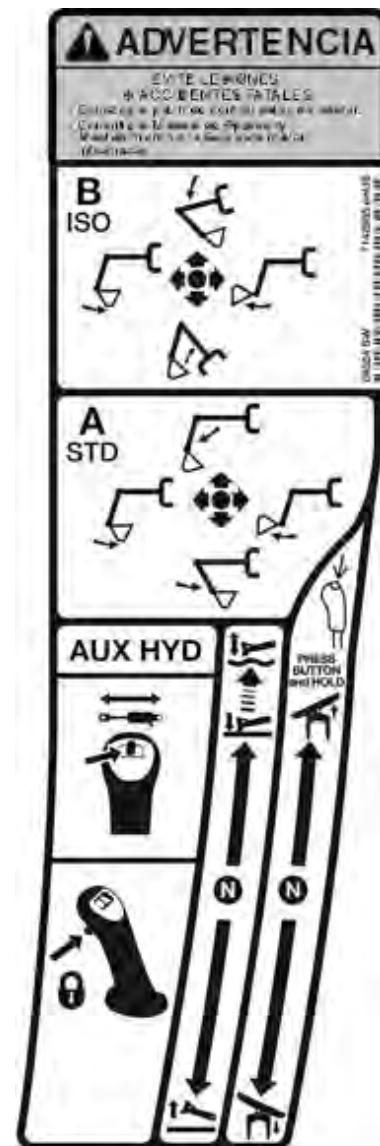
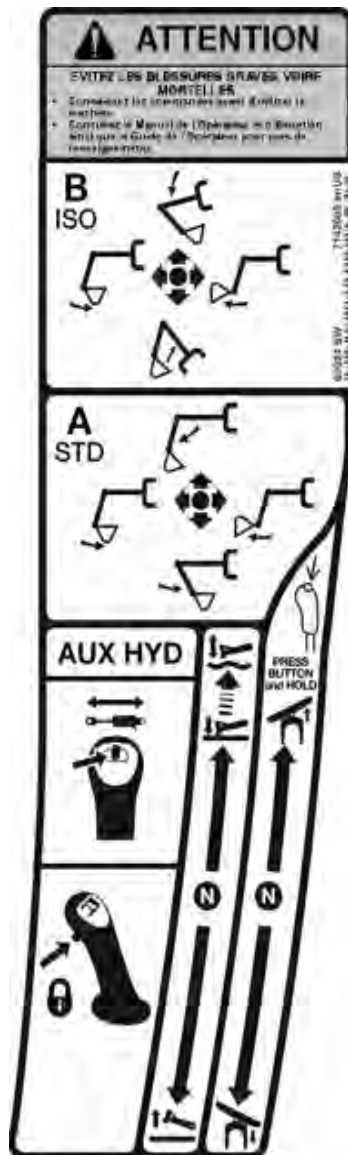
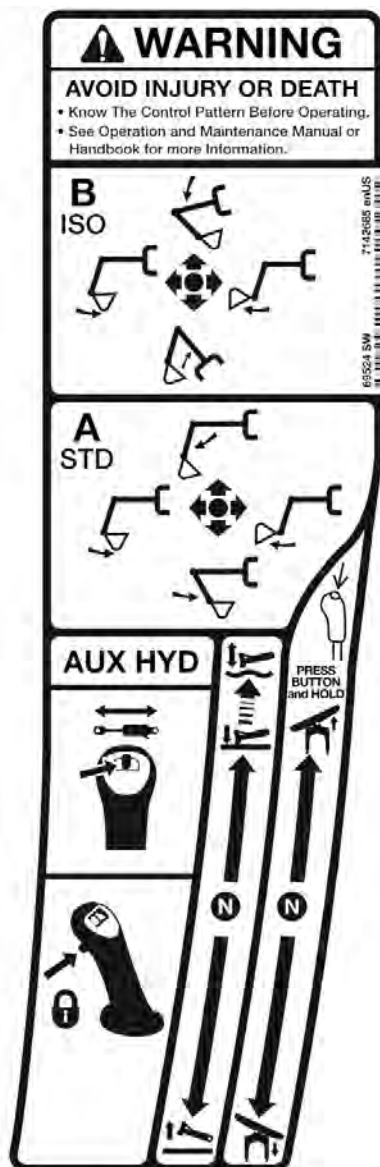
⚠ ADVERTENCIA	
• Fluido presurizado caliente. • Puede provocar quemaduras graves.	
39894	SW 01 6804233 AR

⚠ AVERTISSEMENT	
• Liquide chaud sous pression. • Risque de graves brûlures.	
39894	DV-99-6804233-FR



6817815

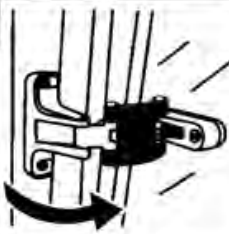
Dealer Copy -- Not for Resale





EMERGENCY EXIT

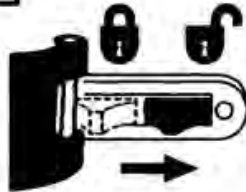
1



Pull out on latch.

44201

2



Slide button to unlock.

3



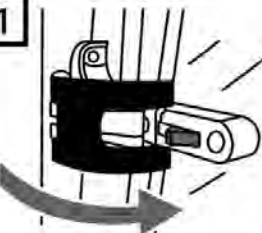
Unhook latch and push window out.

SW 03 6815984



SALIDA DE EMERGENCIA

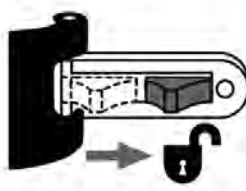
1



Hale el pestillo hacia afuera y extiende del todo.

44201

2



Deslice el botón para desbloquear.

3



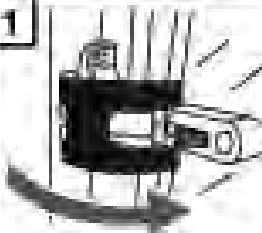
Libere el pestillo y empuje la ventana hacia afuera.

SW 04 6815984 AR



SORTIE DE SECOURS

1



Sortez complètement le loquet.

44201

2



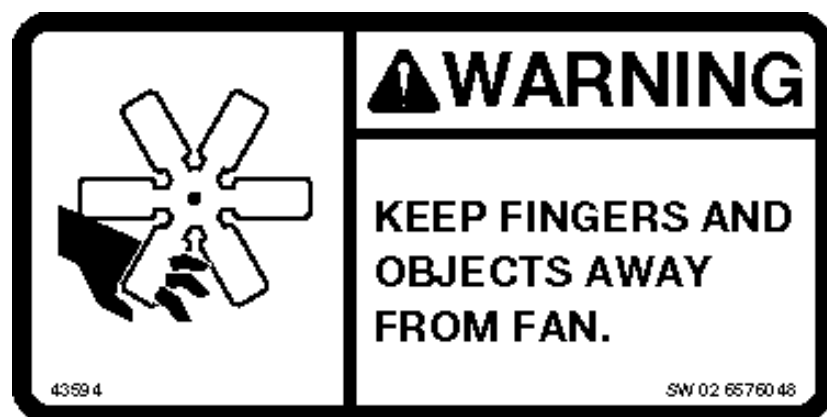
Déplacez le bouton pour déverrouiller.

3



Décrochez le loquet et repoussez la fenêtre vers l'extérieur.

SW 04 6815984 AR





WARNING

AVOID INJURY OR DEATH

- Keep cover closed except for service.
- Keep engine clean of flammable material.
- Keep body, loose objects and clothing away from electrical contacts, moving parts, hot parts and exhaust.
- Do not use machine in space with explosive dust or gases or with flammable material near exhaust.
- All exhaust gases can kill. Always ventilate.
- Never use ether or starting fluid on diesel engine. Use only starting aids as approved by engine manufacturer.
- Leaking fluids under pressure can enter skin and cause serious injury. Immediate medical attention is required. Wear goggles. Use cardboard to check for leaks.
- Battery acid causes severe burns. Wear goggles. If acid contacts eyes, skin or clothing, flush and get medical attention.
- Battery makes flammable and explosive gas. Keep arcs, sparks, flames and lighted tobacco away.
- For jump start, connect negative cable to the machine frame last (never at the battery). After jump start, remove negative connections at the frame first.

43594

SW 03 6815915



AVERTISSEMENT

POUR EVITER DES BLESSURES GRAVES, VOIRE MORTELLES

- Maintenir les capots fermés à l'exception des opérations d'entretien
- Eloigner tout matériau inflammable du moteur
- Eloigner le corps, les objets et les vêtements flottants des contacts électriques, pièces en mouvement, pièces chaudes et de l'échappement
- Ne pas utiliser la machine dans un lieu présentant des poussières ou gaz explosifs ou avec des matériaux inflammables à proximité de l'échappement
- Tous les gaz d'échappement sont mortels. Aérer le local
- Ne jamais utiliser d'éther ou de fluide de démarrage avec un moteur diesel mais uniquement les dispositifs d'aide au démarrage approuvés par le fabricant du moteur.
- Les fuites de liquide sous haute pression peuvent pénétrer sous la peau et provoquer des blessures graves. Consulter immédiatement un médecin. Porter des lunettes de sécurité. Vérifier les fuites avec un morceau de carton.
- L'électrolyte des batteries provoque des blessures graves. Porter des lunettes de sécurité. En cas de projection d'électrolyte dans les yeux, sur la peau ou les vêtements, rincer et consulter un médecin.
- Les batteries dégagent des gaz inflammables et explosifs. Éviter de produire des arcs électriques et des étincelles ou d'approcher des flammes nues et de fumer à proximité des batteries.
- Pour démarrer avec des câbles volants, brancher le câble négatif sur le bâti de la machine en dernier (jamais sur la batterie). Après démarrage, débrancher le câble négatif en premier.

43594

VM-03-6815915-FT



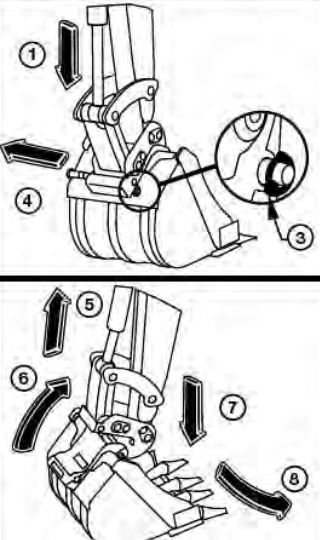
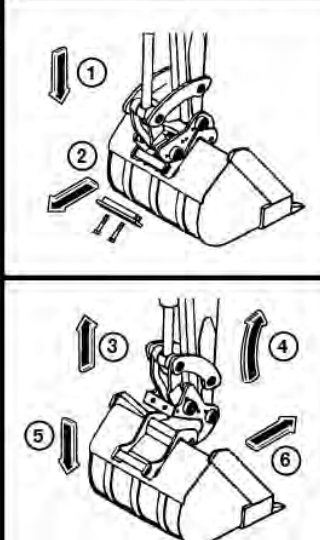
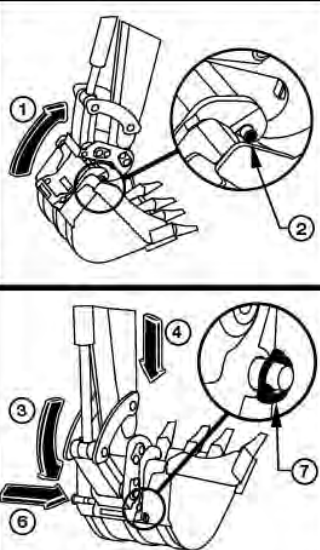
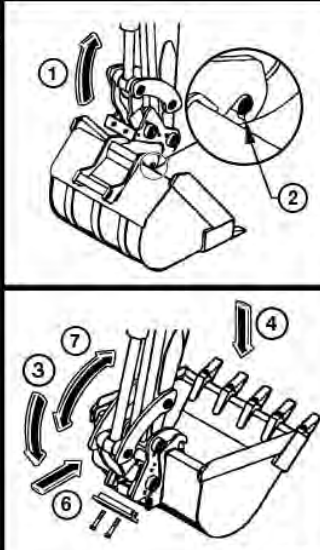
ADVERTENCIA

EVITE LESIONES O ACCIDENTES FATALES

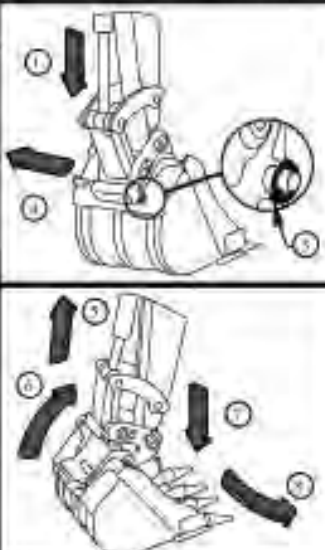
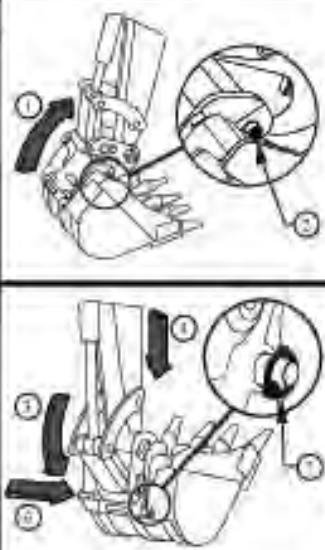
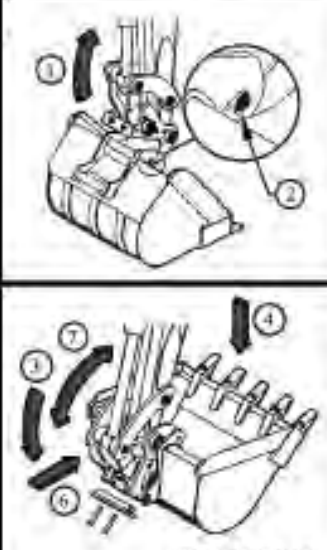
- Mantenga la tapa cerrada excepto para dar servicio.
- Mantenga el motor libre de material inflamable.
- Mantenga el cuerpo, objetos sueltos y prendas alejados de contactos eléctricos, partes móviles y el escape.
- No use la máquina en espacios con polvo o gases explosivos, o con material inflamable cerca del escape.
- Todos los gases de escape pueden matar. Ventile siempre.
- Jamás use ter o fluido de arranque en motores diesel. Use solo ayudas de arranque aprobados por el fabricante del motor.
- Los fluidos bajo presión que se fugan pueden penetrar la piel y provocar lesiones graves. Atención médica inmediata es requerida. Porte lentes de seguridad. Use cartón para verificar la presencia de fugas.
- El ácido de batería causa quemaduras graves. Porte lentes de seguridad. Si el ácido hace contacto con ojos, piel o ropa, purgue y busque atención médica.
- La batería produce gas inflamable y explosivo. Mantenga arcos, chispas, llamas y tabaco encendido alejados.
- Para arranques en puente, conecte el cable negativo en el bastidor de la máquina de último (jamás en la batería). Después del arranque en puente, retire primero las conexiones negativas en el marco.

43594

SW 03 6815915 AR

PIN ON STYLE X-CHANGE [®] SYSTEM		BOLT ON STYLE X-CHANGE [®] SYSTEM	
ATTACHMENT REMOVAL		ATTACHMENT REMOVAL	
ATTACHMENT INSTALLATION		ATTACHMENT INSTALLATION	
59327			SW 04 7102651
SEE OPERATION & MAINTENANCE MANUAL FOR MORE INSTRUCTIONS AND USE WITH OTHER ATTACHMENTS			

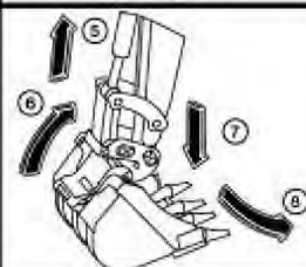
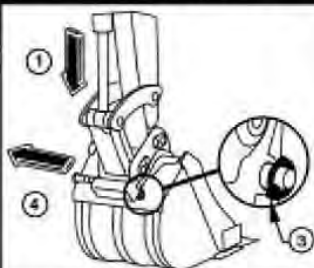
Dealer Copy -- Not for Resale

SISTEMA X-CHANGE FUADO CON PASADOR		SISTEMA X-CHANGE FUADO CON PERNOS	
DESINSTALACIÓN DE IMPLEMENTO 1. Coloque el BRAZO en posición VERTICAL, descienda el implemento hasta el suelo y detenga el motor. 2. Gire la llave a ON (no encienda el motor) y mueva ambos joysticks para liberar la presión hidráulica. 3. Retire el pin de retención. 4. Retire el pasador. 5. Encienda el motor. Eleve el "boom" para disenganchar el implemento. 6. Retraiga del todo el cilindro del cucharón. 7. Baje el "boom" hasta que los pines se liberen de los ganchos. 8. Mueva el brazo hacia el operador.		DESINSTALACIÓN DE IMPLEMENTO 1. Descienda el implemento hasta al suelo y detenga el motor. 2. Retire los dos pernos y la placa. 3. Encienda el motor. Eleve el "boom" para liberar el implemento. 4. Retraiga del todo el cilindro del cucharón. 5. Baje el "boom" hasta que los pines se liberen de los ganchos. 6. Mueva el brazo hacia adentro.	
INSTALACIÓN DE IMPLEMENTO 1. Retraiga del todo el cilindro del cucharón. 2. Coloque los pines en los ganchos. 3. Eleve el "boom" y extienda el cilindro del cucharón hasta que el X-Change haga contacto con el espaldar del implemento. 4. Descienda el "boom" e implemento hasta el suelo CON EL BRAZO VERTICAL hasta que el X-Change esté enganchado del todo. 5. Detenga el motor, gire la llave a OFF (no encienda el motor) y mueva ambos joysticks para liberar la presión hidráulica. 6. Instale el pasador. 7. Instale el pin de retención. 8. Revise que la instalación sea correcta. Eleve el implemento, y extienda y retraiga del todo el cilindro del cucharón.		INSTALACIÓN DE IMPLEMENTO 1. Retraiga del todo el cilindro del cucharón. 2. Coloque los pines en los ganchos. 3. Eleve el "boom" y extienda el cilindro del cucharón hasta que el X-Change haga contacto con el espaldar del implemento. 4. Baje el "boom" e implemento hasta el suelo CON EL BRAZO VERTICAL hasta que el X-Change se enganche del todo. 5. Detenga el motor. 6. Inserte dos pernos a través de la placa y apriete a un torque de 140 lbs-pies (190 N-m). 7. Revise que la instalación sea correcta. Eleve el implemento, y extienda y retraiga del todo el cilindro del cucharón.	
59327		SW 04 7102651 AR	
VER EL MANUAL DE OPERACIÓN Y MANTENIMIENTO PARA MAYORES INSTRUCCIONES Y USOS CON OTROS IMPLEMENTOS.			

SYSTEME X-CHANGE® A GOUPILLE

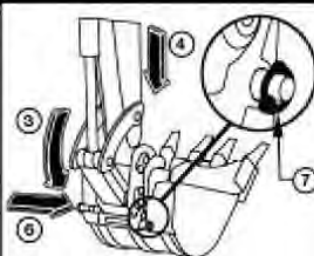
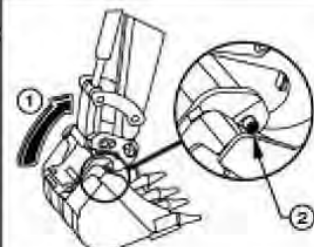
DEPOSE DE L'ACCESSOIRE

1. Placez le BRAS EN POSITION VERTICALE, abaissez l'accessoire sur le sol et arrêtez le moteur.
2. Tournez la clé en position ON (MARCHE) (pas en position Start (Démarrage)) et déplacez les deux manipulateurs pour libérer la pression hydraulique.
3. Déposez la goupille de retenue.
4. Déposez la goupille.
5. Démarrez le moteur. Relevez la flèche pour permettre à l'accessoire de tomber sur les crochets.
6. Rétractez complètement le vérin du godet.
7. Abaissez la flèche jusqu'à ce que les axes se désengagent des crochets.
8. Déplacez le bras en direction de l'opérateur.



INSTALLATION DE L'ACCESSOIRE

1. Rétractez complètement le vérin du godet.
2. Engagez les axes dans les crochets.
3. Relevez la flèche et étendez le vérin du godet jusqu'à ce que le X-change entre en contact avec l'arrière de l'accessoire.
4. Abaissez la flèche et l'accessoire sur le sol AVEC LE BRAS VERTICAL jusqu'à ce que le X-change s'engage complètement.
5. Arrêtez le moteur, tournez la clé en position ON (MARCHE) (pas en position Start (Démarrage)) et déplacez les deux manipulateurs pour libérer la pression hydraulique.
6. Installez la goupille.
7. Installez la goupille de retenue.
8. Vérifiez que le montage est correct. Levez l'accessoire et étendez et rétractez complètement le vérin du godet.

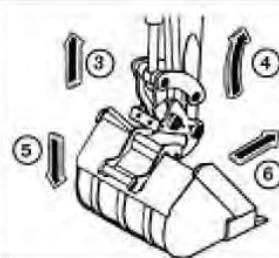
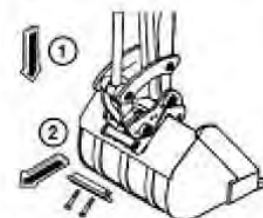


59027

SYSTEME X-CHANGE® BOULONNE

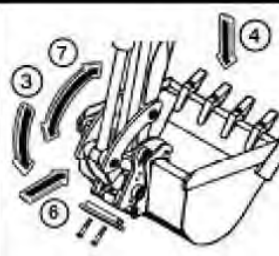
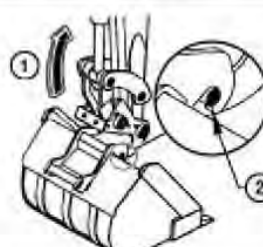
DEPOSE DE L'ACCESSOIRE

1. Abaissez l'accessoire sur le sol et arrêtez le moteur.
2. Déposez les deux boulons et la plaque.
3. Démarrez le moteur. Relevez la flèche pour permettre à l'accessoire de tomber sur les crochets.
4. Rétractez complètement le vérin du godet.
5. Abaissez la flèche jusqu'à ce que les axes se désengagent des crochets.
6. Déplacez le bras en direction de l'opérateur.



INSTALLATION DE L'ACCESSOIRE

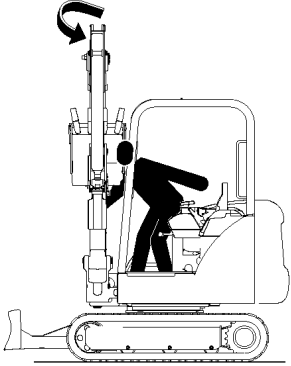
1. Rétractez complètement le vérin du godet.
2. Engagez les axes dans les crochets.
3. Relevez la flèche et étendez le vérin du godet jusqu'à ce que le X-change entre en contact avec l'arrière de l'accessoire.
4. Abaissez la flèche et l'accessoire sur le sol AVEC LE BRAS VERTICAL jusqu'à ce que le X-change s'engage complètement.
5. Arrêtez le moteur.
6. Insérez les deux boulons à travers la plaque et serrez-les à un couple de 190 Nm.
7. Vérifiez que le montage est correct. Levez l'accessoire et étendez et rétractez complètement le vérin du godet.



SW 04 7102651

VOIR LE MANUEL DE L'OPÉRATEUR ET D'ENTRETIEN POUR PLUS D'INSTRUCTIONS ET POUR TOUTE UTILISATION AVEC D'AUTRES ACCESSOIRES

**WARNING**



AVOID INJURY OR DEATH

- Never stand and lean out of cab when engine is on.
- Failure to follow this instruction can cause accidental activation of controls, resulting in unexpected movement.

41848

SW 00 6809829

**ADVERTENCIA**



EVITE LESIONES O ACCIDENTES FATALES

- Jamás se pare o recueste fuera de la cabina cuando el motor está encendido.
- No seguir esta instrucción puede provocar la activación accidental de los controles, resultando en un movimiento inesperado de la máquina.

41848

SW 04 6809829 AR

**AVERTISSEMENT**



DANGER DE MORT

- Ne vous mettez pas debout et ne vous penchez pas à l'extérieur de la cabine quand le moteur est en marche.
- En cas de négligence, vous pouvez activer les commandes et entraîner un mouvement accidentel.

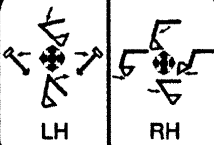
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DV-00-6809829-FR

JOYSTICK CONTROL PATTERN SELECTOR LEVER (6815957)

JOYSTICK CONTROL PATTERN SELECTOR LEVER

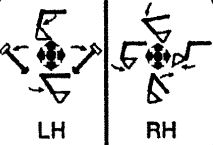
CONTROL PATTERN A (STD)



LH RH



CONTROL PATTERN B (ISO)



LH RH

- READ AND UNDERSTAND CONTROL PATTERN BEFORE SELECTING LEVER POSITION
- ROTATE LEVER FULLY TO SELECT PATTERN

43716

SW 03 681 6957

JOYSTICK SELECTOR DE PATRÓN DE CONTROL

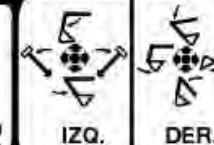
PATRÓN DE CONTROL A (ESTÁND.)



IZQ. DER.



PATRÓN DE CONTROL B (ISO)



IZQ. DER.

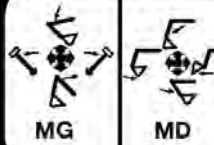
- LEA Y ENTIENDA EL PATRÓN DE CONTROL ANTES DE SELECCIONAR LA POSICIÓN DE LA PALANCA
- ROTE LA PALANCA COMPLETAMENTE PARA SELECCIONAR EL PATRÓN

43716

SW 04 6815957 AH

LEVIER DE SELECTION DU SCHEMA DE COMMANDE DU MANIPULATEUR

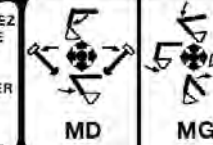
SCHEMA DE COMMANDE A (STD)



MG MD



SCHEMA DE COMMANDE B (ISO)



MD MG

- CONNAISSEZ ET COMPRENEZ LE SCHEMA DE COMMANDE AVANT DE SELECTIONNER LA POSITION DU LEVIER.
- DEPLACEZ A FOND LE LEVIER POUR SELECTIONNER LE SCHEMA

43716

SW 04 681 6067

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MST-24

435 Operation & Maintenance Manual

SPECIFICATIONS

EXCAVATOR SPECIFICATIONS	SPEC-3
435 Dimensions With Standard Arm and Long Arm Option.	SPEC-3
435 Dimensions With Standard Arm and Long Arm Option.	SPEC-3
Capacities	SPEC-9
Controls	SPEC-6
Drive System	SPEC-9
Electrical	SPEC-9
Engine	SPEC-7
Ground Pressure	SPEC-10
Hydraulic Cylinders	SPEC-8
Hydraulic Cycle Times	SPEC-9
Hydraulic System	SPEC-8
Performance (S/N AACD11001 & Above), (AA8A11001 & Above) ..	SPEC-6
Performance (S/N AACD11001 & Above), (AA8A11001 & Above) ..	SPEC-6
Slew System	SPEC-9
Tracks	SPEC-10
Undercarriage	SPEC-9

SPECIFICATIONS

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Dealer



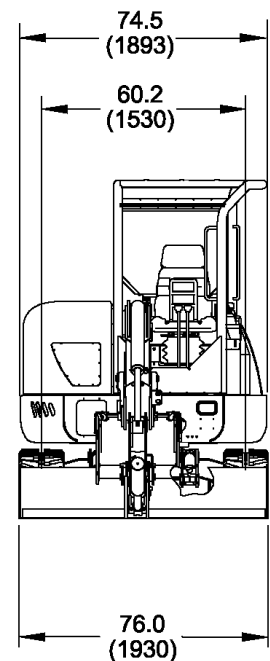
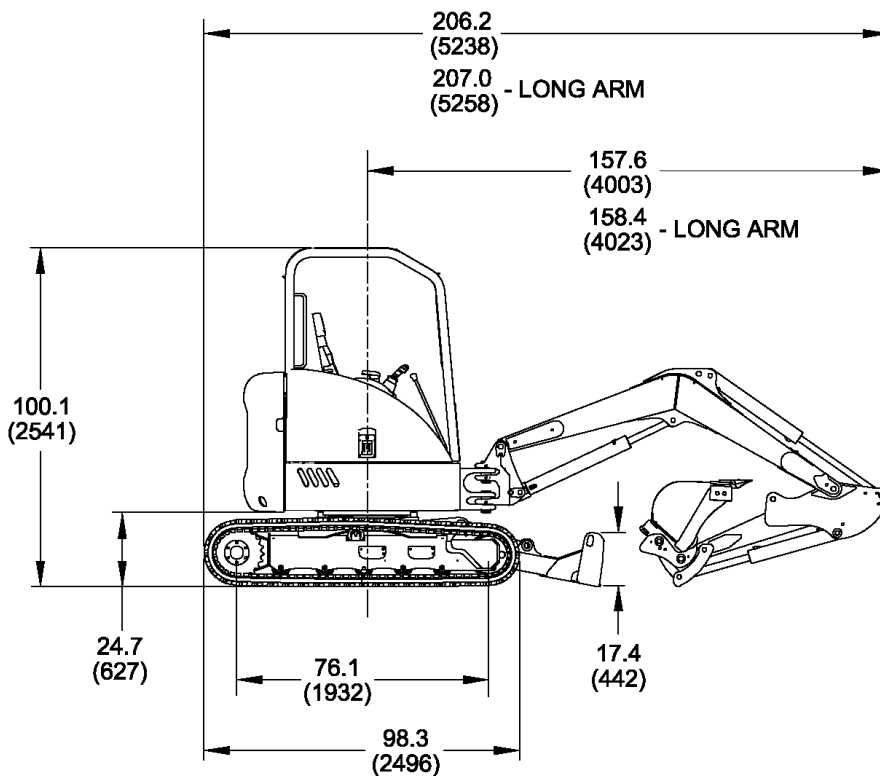
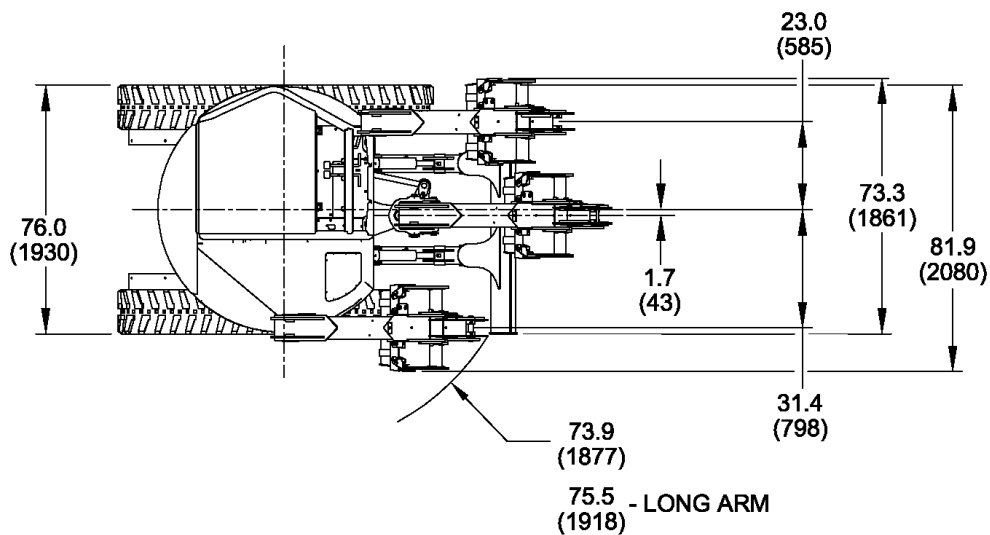
Bobcat®

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EXCAVATOR SPECIFICATIONS

435 Dimensions With Standard Arm and Long Arm Option

- All dimensions are shown in inches. Respective metric dimensions are given in millimeters enclosed by parentheses.
- Where applicable, specification conform to SAE or ISO standards and are subject to change without notice.



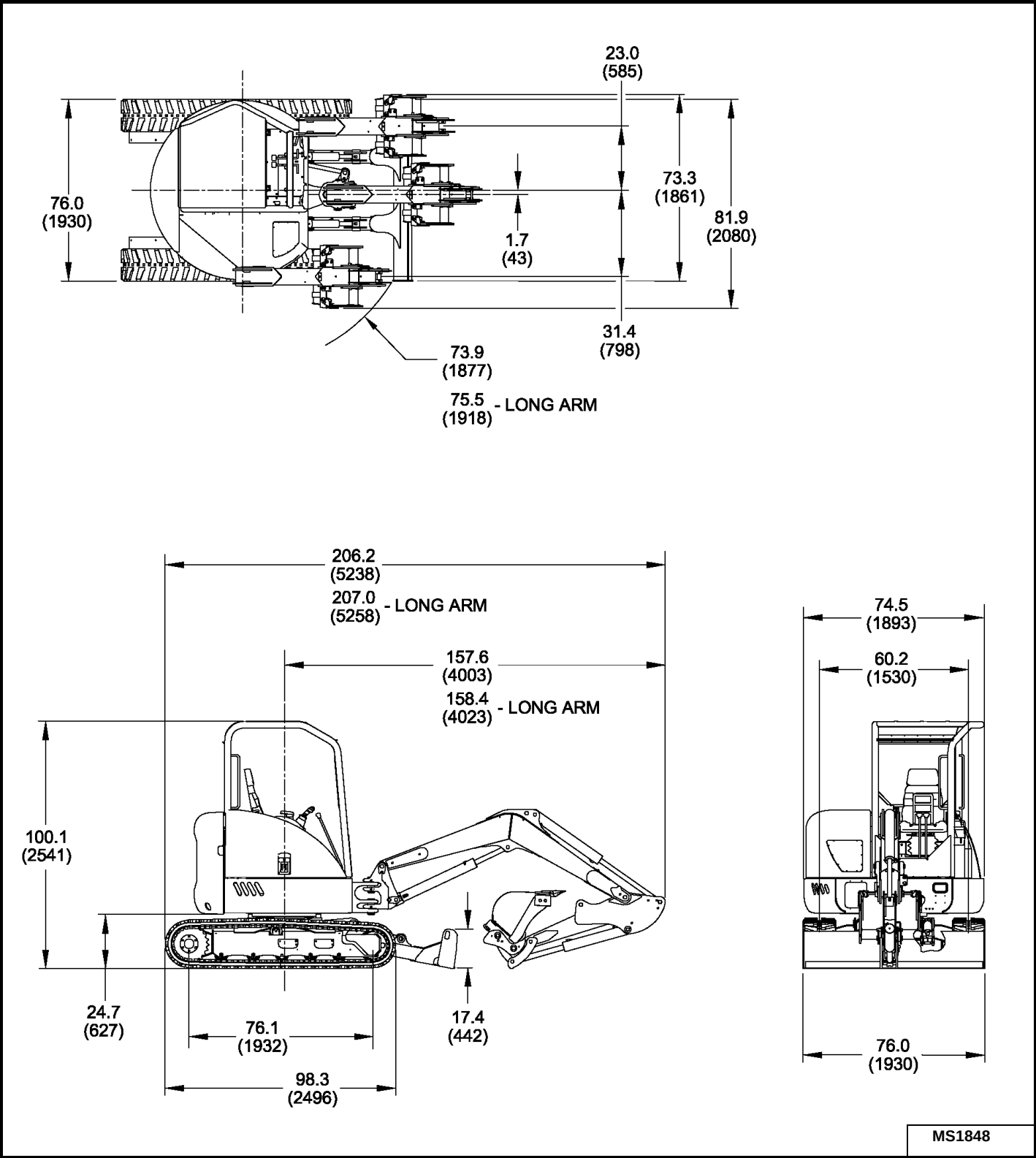
MS1848

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EXCAVATOR SPECIFICATIONS

435 Dimensions With Standard Arm and Long Arm Option (Cont'd)

- All dimensions are shown in inches. Respective metric dimensions are given in millimeters enclosed by parentheses.
- Where applicable, specification conform to SAE or ISO standards and are subject to change without notice.



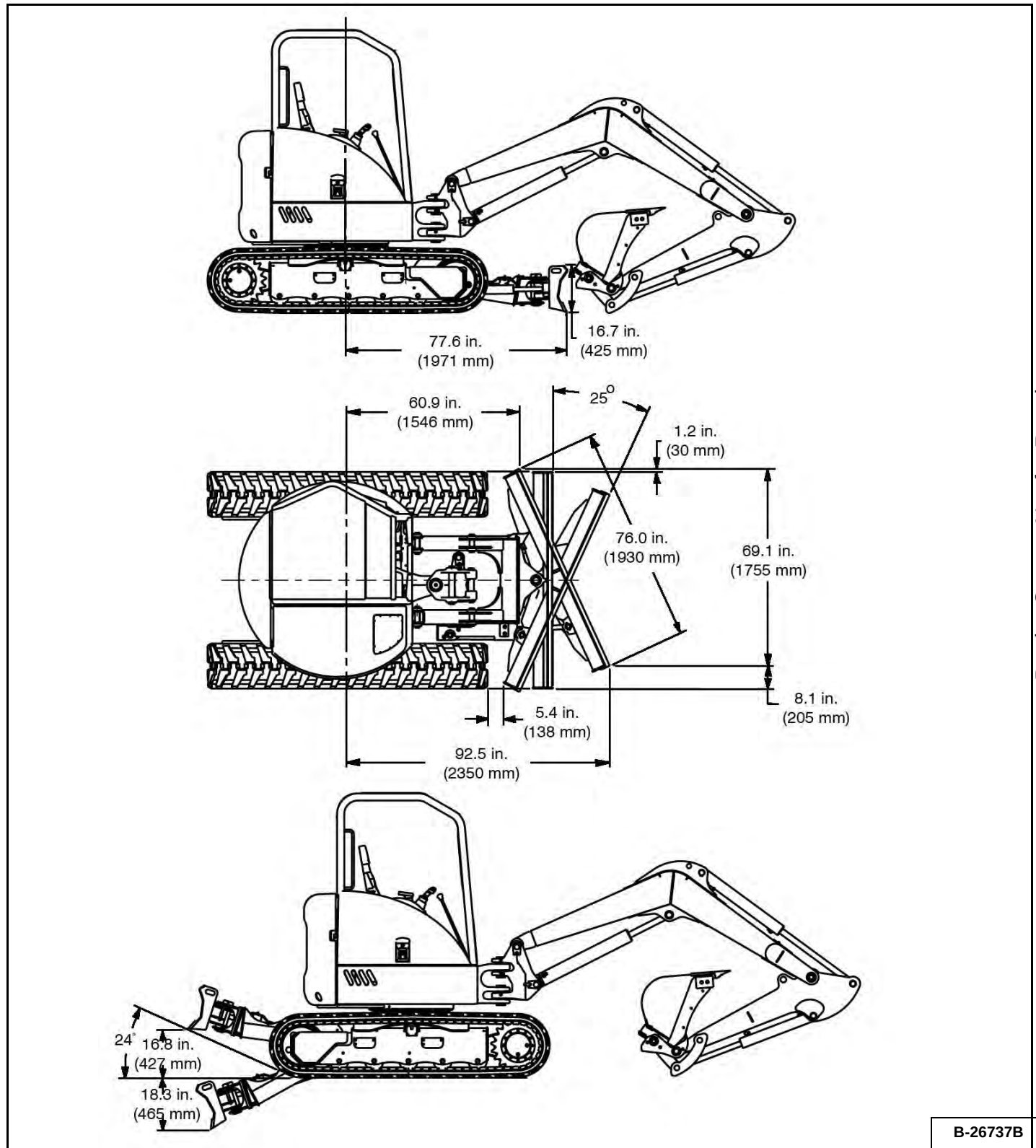
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EXCAVATOR SPECIFICATIONS (CONT'D)

435 Dimensions With Optional Angle Blade Dimensions

For all dimension not shown below, (See 435 Dimensions With Standard Arm and Long Arm Option on Page SPEC-3.)

- All dimensions are shown in inches. Respective metric dimensions are given in millimeters enclosed by parentheses.
- Where applicable, specification conform to SAE or ISO standards and are subject to change without notice.



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SPECIFICATIONS (CONT'D)

Performance (S/N AACD11001 & Above), (AA8A11001 & Above)

Machine Serial Number	S/N AACD11001 & Above	AA8A11001 & Above
Operating weight w/ canopy, rubber tracks, standard arm, and 24 inch (609 mm) bucket	10685 lb. (4846 kg)	10742 lb. (4872 kg)
Steel tracks add 74 lbs (33 Kg) Cab w/heater add 305 lbs (138 Kg) Cab w/HVAC add 355 lbs (161 kg) With Long Arm add 247 lb. (112 kg) W/Angle Blade add 263 lb. (120 kg)	Add the following weights to the above, if equipped with any of these options.	
Travel Speed	Low Range 2.73 mph (4.39 km/hr) High Range 5.06 mph (8.14 km/hr)	
Boom Swing (Offset)	Left 90° Right 50°	

Performance (S/N AACB11001 & Above), (AA8911001 & Above)

Machine Serial Number	AACB11001 & Above	AA8911001 & Above
Operating weight w/ canopy, rubber tracks, standard arm, and 24 inch (609 mm) bucket	10388 lb. (4711 kg)	10445 lb. (4737 kg)
Steel tracks add 74 lbs (33 Kg) Cab w/heater add 305 lbs (138 Kg) Cab w/HVAC add 355 lbs (161 kg) With Long Arm add 247 lb. (112 kg) W/Angle Blade add 263 lb. (119 kg)	Add the following weights to the above, if equipped with any of these options.	
Travel Speed	Low Range 1.67 mph (2.69 km/hr) High Range 2.74 mph (4.41 km/hr)	
Boom Swing (Offset)	Left 90° Right 50°	

Controls

Steering	Two hand levers or foot pedals
Hydraulics	Two hand operated levers (joysticks) control boom, bucket, arm and upperstructure slew
Auxiliary Hydraulics	Electric switch in right joystick
Auxiliary Pressure Release	Electric switch in right joystick
Engine	Hand Lever engine speed, key type start switch
Starting Aid	Glow Plugs - activated by key switch
Brakes	
Travel	
Service & Parking	Hydraulic lock in motor circuit
Swing	
Service	Hydraulic lock on motor
Holding	Automatically applied slew brake integrated in slew motor

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SPECIFICATIONS (CONT'D)

Engine

Make/Model	Kubota V2403-M-DI-TE3B-BC-3
Fuel/Cooling	Diesel/Liquid
Horsepower (SAE Net)	47.5 HP (35.4 Kw)
Torque	179.5 ft.-lb. (132,4 N•m)
Number Of Cylinders	4
Displacement	148.5 ci (2.43 L)
Bore/Stroke	3.43 x 4.03 in. (87,1 x 102,3 mm)
Lubrication	Pressure System with Filter
Crankcase Ventilation	Closed Breathing
Air Cleaner	Dry replaceable paper dual cartridge
Ignition	Diesel-Compression
Low Idle Speed	1220 RPM
High Idle Speed	2470 RPM
Engine Coolant	Propylene Glycol / water mixture (53% PG / 47% water)

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SPECIFICATIONS (CONT'D)

Hydraulic System

Pump Type	Engine driven, dual outlet variable displacement piston/gear pump	
Machine Serial Number	(S/N AACD11001 & Above), (S/N AA8A11001 & Above)	(S/N AACB11001 & Above), (S/N AA8911001 & Above)
Pump Capacity Gear Pump Piston Pump	8.32 GPM (31,5 L/min.) 26.15 GPM (99,0 L/min.)	8.32 GPM (31,5 L/min.) 26.15 GPM (99,0 L/min.)
Auxiliary Flow	19.8 GPM (75 L/min.)	19.8 GPM (75 L/min.)
Hydraulic Filter	Full flow replaceable, 3 micron synthetic media element	
Control Valve	7 spool closed center	9 spool closed center
Fluid Type	Bobcat Fluid, Hydraulic / Hydrostatic 6903117 - (2.5 Gal.) 6903118 - (5 Gal.) 6903119 - (55 Gal.)	
System Relief Pressure Travel Circuits Slew Circuit Boom, Boom Swing, Bucket, Arm, Auxiliary, Blade Joystick Control Pressure	5076 PSI (350 bar) 2800 PSI (193 bar) 3480 PSI (240 bar) 435 PSI (30 bar)	4060 PSI (325 bar) 2800 PSI (193 bar) 3480 PSI (240 bar) 435 PSI (30 bar)
Auxiliary Relief	3045 PSI (210 bar)	3045 PSI (210 bar)
Arm Port Relief Base End And Rod End	4206 PSI (290 bar)	4206 PSI (290 bar)
Boom Port Relief Base End And Rod End	4206 PSI (290 bar)	4206 PSI (290 bar)
Bucket Port Relief Base End And Rod End	4206 PSI (290 bar)	4206 PSI (290 bar)
Blade Port Relief Base End	3770 PSI (260 bar)	3770 PSI (260 bar)
Angle Blade Port Relief Base End and Rod End (if equipped)	4500 PSI (310 bar)	4500 PSI (310 bar)
Main Hydraulic Filter Bypass	50 PSI (3.4 bar)	50 PSI (3.4 bar)
Case Drain And Fan Motor Filter Bypass	50 PSI (3.4 bar)	50 PSI (3.4 bar)

Hydraulic Cylinders

Cylinder	Bore	Rod	Stroke
Boom (cushion up)	3.75 in. (92,25 mm)	2.0 in. (50,8 mm)	26.72 in. (678,6 mm)
Arm (cushion retract)	3.25 in. (86,2 mm)	2.0 in. (50,8 mm)	26.0 in. (660,4 mm)
Bucket	3.0 in. (76,2 mm)	1.75 in. (44,5 mm)	20.63 in. (524 mm)
Boom Swing (cushion left/ right)	3.25 in. (86,2 mm)	2.0 in. (50,8 mm)	23.51 in. (597,2 mm)
Blade	3.25 in. (86,2 mm)	1.75 in. (44,5 mm)	6.10 in. (154,9 mm)
Angle Blade (if equipped)	2.50 in. (63,5 mm)	1.50 in. (38,1 mm)	16.65 in. (428,0 mm)

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SPECIFICATIONS (CONT'D)

Hydraulic Cycle Times

Boom	Raise 4.2 Seconds	Lower 4.5 Seconds
Arm	Retract 3.35 Seconds	Extend 2.9 Seconds
Bucket	Curl 2.35 Seconds	Dump 1.8 Seconds
Blade	Raise 2.5 Seconds	Lower 2.5 Seconds
Angle Blade (if equipped)	Retract 2.2 Seconds	Extend 1.9 Seconds
Boom Swing	Left 6.2 Seconds	Right 6.3 Seconds

Electrical

Starting Aid	Glow Plugs
Alternator	12 volts, 90 Amp open frame w/ internal regulator
Battery	12 volts 600 CCA @ 0° F (-18° C)
Starter	12 volts gear reduction 2.7 HP (2,0 KW)
Instrumentation	Fuel Gauge, Audible alarm, visual warning for engine functions and hourmeter

Drive System

Final Drive	Each track is driven by hydrostatic axial piston motor
Type of Reduction	Two-stage planetary gear reduction

Slew System

Slew Motor	Radial Piston Motor With Brake
Slew Circle	Single row shear type ball bearing with internal gear
Slew	9.3 RPM

Undercarriage

Crawler Track Design	Sealed track rollers with boxed section track, Roller frame, Grease type track adjuster
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Capacities

Fuel Tank	17.8 Gal. (67,4 L)
Hydraulic Reservoir Only (Center of Sight Glass)	Tank Cap. 9,7 Gal. (36,7 L)
Hydraulic System (with Reservoir)	14.3 Gal. (52,2 L)
Cooling System	4.5 Gal. (17.0 L)
Engine Oil and Filter	7.5 qt. (7,1 L)
Final Drive (each)	0.55 qt. (0,5 L)

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SPECIFICATIONS (CONT'D)

Tracks

Type	Rubber	Steel
Width	15.7 in. (400 mm)	15.7 in. (400 mm)
Number Of Shoes	Single Assembly	39
Number of Track Rollers (per side)	5 (on bottom) / 1 (on top) per side	5 (on bottom) / 1 (on top) per side

Ground Pressure

Ground Pressure (Standard Arm)	
Rubber Track	4.00 PSI (0,276 bar)
Steel Track	4.03 PSI (0,278 bar)
Ground Pressure (Long Arm)	
Rubber Track	4.10 PSI (0,283 bar)
Steel Track	4.13 PSI (0,285 bar)

WARRANTY

WARRANTY WARRANTY-3

WARRANTY

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WARRANTY

Bobcat Excavators

Bobcat Company warrants to its authorized dealers and authorized dealers of Bobcat Equipment Ltd., who in turn warrant to the owner, that each new Bobcat Excavator will be free from proven defects in material and workmanship with respect to (i) all components of the product except as otherwise specified herein for twelve (12) months, (ii) tracks for twelve (12) months on a prorated basis based on the remaining depth of the track at the time any defect is discovered, and (iii) Bobcat brand batteries, for an additional twelve (12) months after the initial twelve month warranty period, provided that Bobcat Company shall only reimburse a fixed portion of the cost of replacing the battery during such additional twelve months. The foregoing time periods shall all commence after delivery by the authorized Bobcat dealer to the original buyer.

During the warranty period, the authorized Bobcat dealer shall repair or replace, at Bobcat Company's option, without charge for parts and labor, any part of the Bobcat product except as otherwise specified herein which fails because of defects in material or workmanship. The owner shall provide the authorized Bobcat dealer with prompt written notice of the defect and allow reasonable time for repair or replacement. Bobcat Company may, at its option, require failed parts to be returned to the factory. Travel time of mechanics and transportation of the Bobcat product to the authorized Bobcat dealer for warranty work are the responsibility of the owner. The remedies provided in this warranty are exclusive.

This warranty does not apply to diesel engine fuel injection pumps and injectors. The owner shall rely solely on the warranty, if any, of the respective manufacturers thereof. This warranty does not cover replacement of scheduled service items such as oil, filters, tune-up parts, and other high-wear items. This warranty does not cover damages resulting from abuse, accidents, alterations, use of the Bobcat product with any accessory or attachment not approved by Bobcat Company, air flow obstructions, or failure to maintain or use the Bobcat product according to the instructions applicable to it.

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