



# Bobcat®

## Operation & Maintenance Manual



# E50

## Compact Excavator

S/N AJ1811001 & Above



6990723enUS (01-19) (H)

Printed in U.S.A.



© 2019 Bobcat Company.  
All rights reserved.  
**NA T4-B**

# OPERATOR SAFETY WARNING



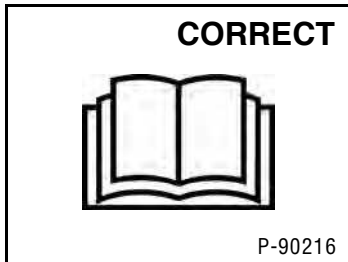
## WARNING

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

W-2001-0502

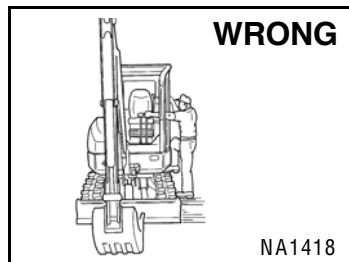


**Safety Alert Symbol:** This symbol with a warning statement, means: "Warning, be alert! Your safety is involved!" Carefully read the message that follows.



⚠ Never operate without instructions.

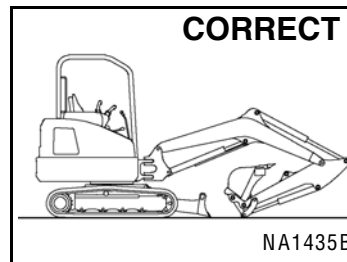
⚠ Read machine signs, and Operation & Maintenance Manual, and Operator's Handbook.



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

⚠ Be sure controls are in neutral before starting.

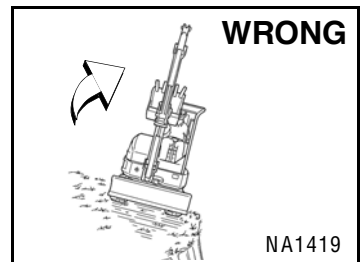
⚠ Sound horn and check behind machine before starting.



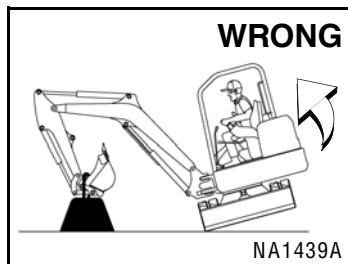
⚠ Never operate without approved cab / canopy.

⚠ Never modify equipment.

⚠ Never use attachments not approved by Bobcat Company.

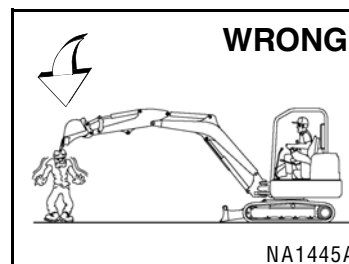


⚠ Avoid steep areas or banks that could break away.



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

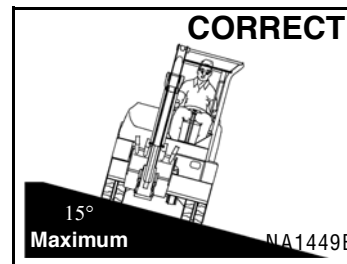
⚠ Operate on flat, level ground.



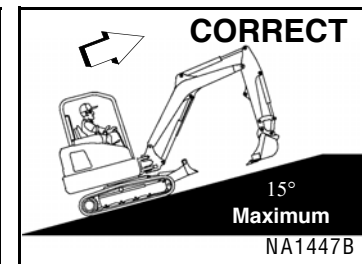
⚠ Keep bystanders out of maximum reach area.

⚠ Do not travel or turn with bucket extended.

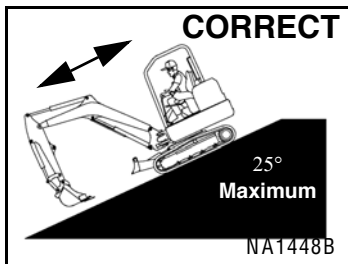
⚠ Never carry riders.



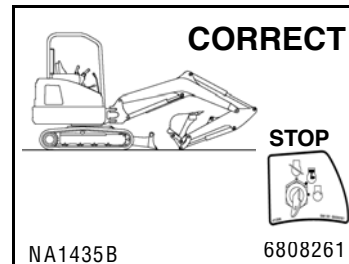
⚠ Never exceed a 15° slope to the side.



⚠ Never travel up a slope that exceeds 15°.

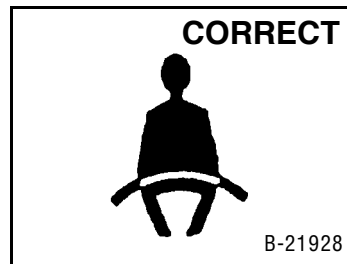


⚠ Never exceed 25° when going down or backing up a slope.



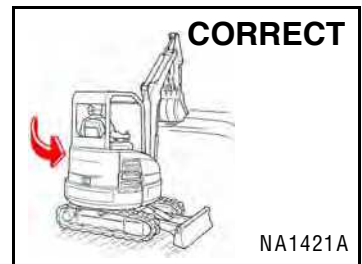
⚠ To leave excavator, lower the work equipment and the blade to the ground.

⚠ Stop the engine.



⚠ Fasten seat belt securely.

⚠ Operate controls only from operator's seat.



⚠ Look in the direction of rotation and make sure no bystanders are in the work area.

## SAFETY EQUIPMENT

The Bobcat® excavator must be equipped with safety items necessary for each job. Ask your Bobcat dealer for information on the availability and safe use of attachments and accessories.

1. SEAT BELT: Check belt fasteners and check for damaged webbing or buckle.
2. OPERATOR CAB / CANOPY (ROPS and TOPS): Check condition and mounting hardware.
3. OPERATOR'S HANDBOOK: Must be in the cab / canopy.
4. LEFT HAND CONSOLE: When raised must deactivate the travel and hydraulic functions.
5. SAFETY SIGNS (DECALS): Replace if damaged.
6. GRAB HANDLES: Replace if damaged.
7. INTEGRATED SLEW LOCK BRAKE.
8. SAFETY TREAD.: Replace if damaged.

OSW66-0117

## CONTENTS

CONTENTS .....	1
FOREWORD .....	2
SAFETY AND TRAINING RESOURCES .....	8
OPERATING INSTRUCTIONS .....	18
PREVENTIVE MAINTENANCE .....	132
SYSTEM SETUP AND ANALYSIS .....	183
MACHINE SIGN TRANSLATIONS .....	201
SPECIFICATIONS .....	233
WARRANTY .....	244
ALPHABETICAL INDEX .....	247

### REFERENCE INFORMATION

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

Excavator Serial Number \_\_\_\_\_  
Engine Serial Number \_\_\_\_\_

NOTES:

---

---

---

---

YOUR BOBCAT DEALER:

ADDRESS:

PHONE:

Bobcat Company  
P.O. Box 128  
Gwinner, ND 58040-0128  
UNITED STATES OF AMERICA

Doosan Bobcat EMEA s.r.o.  
U Kodetky 1810  
263 12 Dobris  
CZECH REPUBLIC

## 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 BOBCAT EXCAVATOR. If you have any questions, see your Bobcat dealer. This manual may illustrate options and accessories not installed on your excavator.

BOBCAT COMPANY IS ISO 9001 CERTIFIED .....	3
REGULAR MAINTENANCE ITEMS .....	3
SERIAL NUMBER LOCATIONS .....	4
Excavator Serial Number .....	4
Engine Serial Number .....	4
DELIVERY REPORT .....	4
EXCAVATOR IDENTIFICATION .....	5
FEATURES, ACCESSORIES AND ATTACHMENTS .....	6
Standard Items .....	6
Options And Accessories .....	6
Attachments .....	6
Buckets Available .....	6
Falling-Object Guards (FOGS) .....	7
Special Applications Kit .....	7
Special Applications Kit Inspection And Maintenance .....	7

## 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, North Dakota (U.S.A.), Pontchâteau (France), and the Bobcat corporate offices (Gwinner, Bismarck, and West Fargo) in North Dakota. **TÜV Rheinland** is the Certified Registrar Bobcat Company chose to assess the company's compliance with the ISO 9001 at Bobcat's manufacturing facility in Dobris (Czech Republic). Only certified assessors, like BSI and TÜV Rheinland, 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.

## REGULAR MAINTENANCE ITEMS

	ENGINE OIL FILTER 7012303		BATTERY 6670251
	FUEL FILTER 7023589		HYDRAULIC FILL / BREATHER CAP 6692836
	AIR FILTER, Outer 6666375		FLUID, Hydraulic / Hydrostatic  6903117 - (2.5 U.S. gal) 6903118 - (5 U.S. gal) 6903119 - (55 U.S. gal)
	AIR FILTER, Inner 6666376		
	PRIMARY HYDRAULIC FILTER 6668819 CASE DRAIN HYDRAULIC FILTER 6516722		ANTI-FREEZE, Propylene Glycol  6983128 - Premixed 6983129 - Concentrate
	HVAC AIR FILTER (IF EQUIPPED) Fresh Air 7176099 Recirculation 7222791		RADIATOR CAP 6646678
<b>ENGINE OIL</b>		<b>GEAR LUBE</b>	6903121 - HD 80W-90 (12 qt)
7023080	SAE 15W-40 – qt	<b>ENGINE OIL</b>	7023081 SAE 15W-40 – U.S. gal 7023077 SAE 10W-30 – U.S. gal 6989148 Synthetic SAE 5W-40 – U.S. gal
7023076	SAE 10W-30 – qt		
6989147	Synthetic SAE 5W-40 – qt		
7023082	SAE 15W-40 – 2.5 U.S. gal		
7023078	SAE 10W-30 – 2.5 U.S. gal		

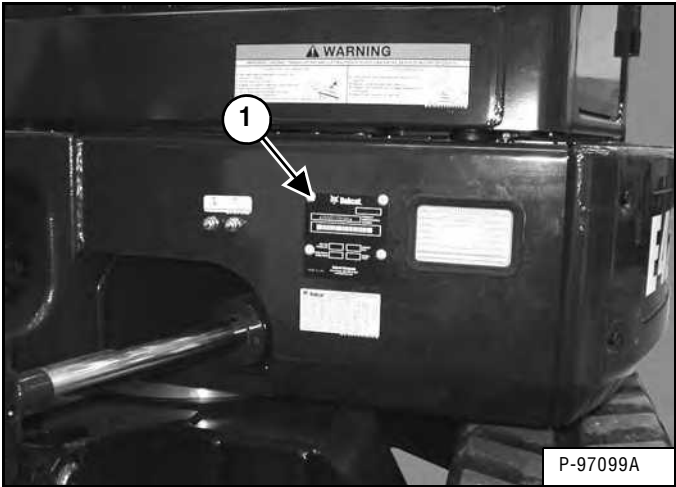
**NOTE:** Always verify Part Numbers with your Bobcat dealer.

SERIAL NUMBER LOCATIONS

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

Excavator Serial Number

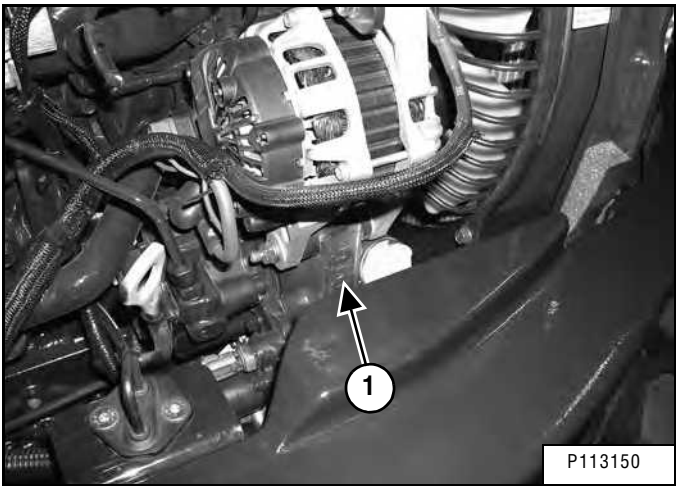
Figure 1



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

Engine Serial Number

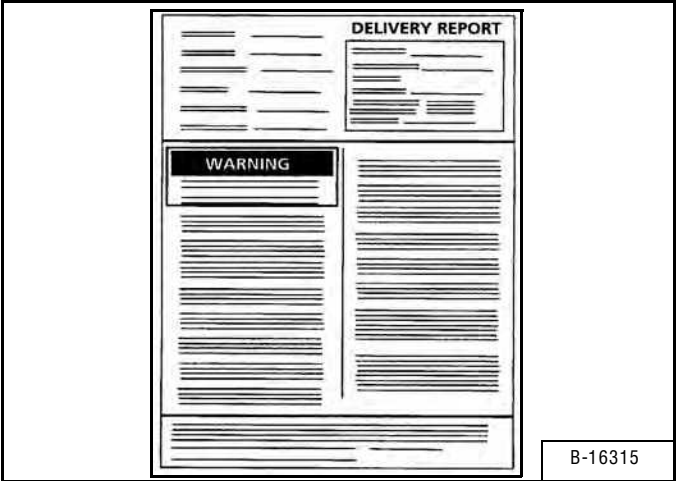
Figure 2



The engine serial number (Item 1) [Figure 2] is located on the side of the engine next to the oil fill cap.

DELIVERY REPORT

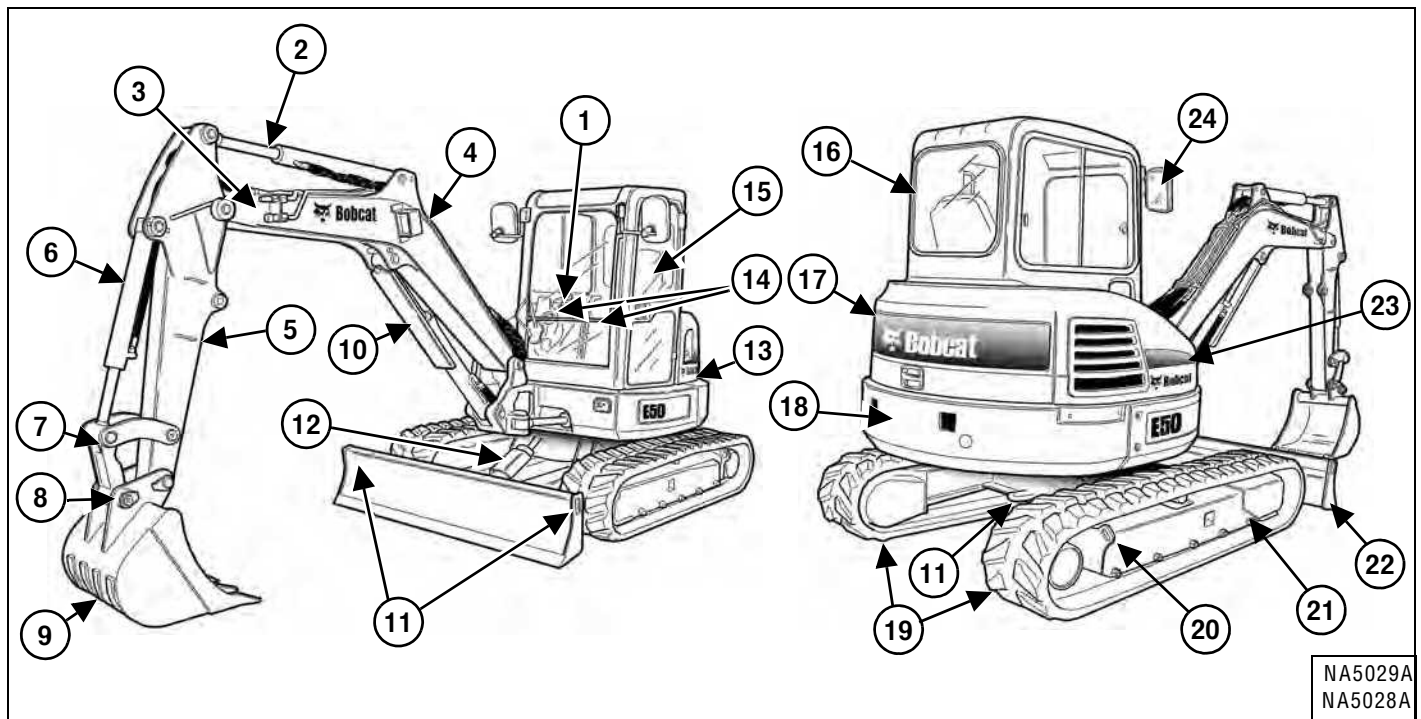
Figure 3



The delivery report [Figure 3] contains a list of items that must be explained or shown to the owner or operator by the dealer when the Bobcat excavator is delivered.

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

## EXCAVATOR IDENTIFICATION



NA5029A  
NA5028A

ITEM	DESCRIPTION	ITEM	DESCRIPTION
1	Operation & Maintenance Manual and Operator's Handbook	16	Cab (ROPS / TOPS AND FOPS) [2]
2	Arm Cylinder	17	Rear Cover
3	Auxiliary Quick Couplers	18	Counterweight
4	Boom	19	Tracks
5	Arm	20	Tie Downs / Lift Points (Both Sides)
6	Bucket Cylinder	21	Track Frame
7	Bucket Link	22	Blade
8	X-Change™ attachment mounting system	23	Right Side Cover
9	Bucket [1]	24	Mirrors
10	Boom Cylinders		
11	Tie Downs		
12	Blade Cylinders		
13	Upperstructure		
14	Control Levers (Joysticks)		
15	Operator's Seat with Seat Belt		

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

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

## FEATURES, ACCESSORIES AND ATTACHMENTS

### Standard Items

Model E50 Bobcat excavators are equipped with the following standard items:

- 1960 mm (77.2 in) Dozer Blade
- Canopy with ROPS / TOPS Approval
- 400 mm (15.7 in) Rubber Tracks
- Two-Speed Travel
- Auto-Shift Drive System
- Auxiliary Hydraulics (With Selectable Auxiliary Hydraulic Flow)
- Hydraulic and Travel Control Lockouts
- Engine Speed Control Dial With Auto Idle Feature
- 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
- Retractable Seat Belt
- Spark Arrester Muffler
- Advanced Diagnostics
- X-Change™
- Counterweight

### 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
- Deluxe Instrument Panel
- Depth Check
- Travel Motion Alarm
- Keyless Start
- Canopy / Cab Mounted Lights
- Catalytic Exhaust Purifier
- Top Guard Kit (FOGS)
- Special Application Kit
- Steel Tracks - 400 mm (15.7 in)
- Steel Tracks - 500 mm (19.7 in)
- Long Arm
- Angle Blade
- Direct to Tank Auxiliary Hydraulics
- Counterweight (Additional)
- Hydraulic X-Change
- Pin Grabber Quick Coupler
- Second Auxiliary Hydraulics
- Overload Warnings
- Arm Mounted Auxiliary Hydraulic Couplers
- HEPA HVAC Fresh Air Filter

***Specifications subject to change without notice and standard items may vary.***

### Attachments

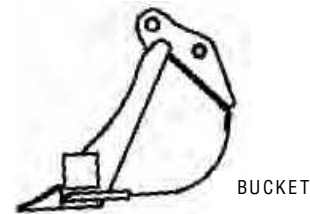
These and other attachments are approved for use on this model Bobcat excavator. Do not use unapproved attachments. Attachments not manufactured by Bobcat may not be approved.

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

See your Bobcat dealer for information about approved attachments and attachment Operation & Maintenance Manuals.

- Auger
- Breaker
- Hydraulic Clamp
- Pro Clamp™ System
- 3-Tined Grapple
- Compactor
- Grading Blade
- Power Tilt
- Ripper
- Hydro tilt
- Packer wheel
- Trencher
- Laser Receiver

### 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.

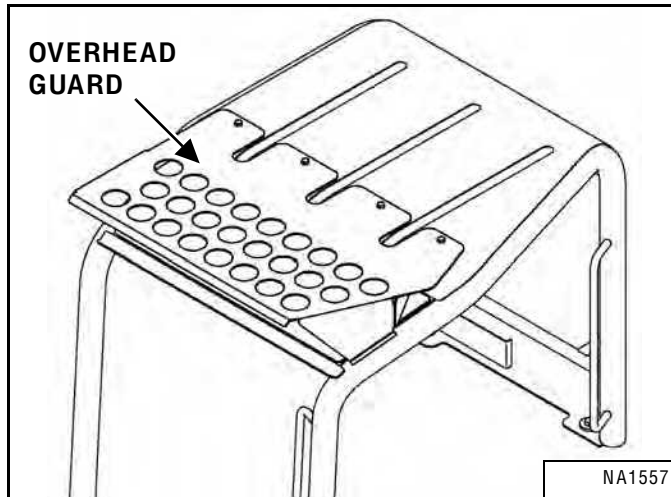
- 305 mm (12 in) Trenching
- 330 mm (13 in) Trenching
- 457 mm (18 in) Trenching
- 610 mm (24 in) Trenching
- 610 mm (24 in) Heavy duty trenching
- 760 mm (30 in) Trenching
- 914 mm (36 in) Trenching
- 914 mm (36 in) Heavy duty trenching
- 1321 mm (52 in) Grading



## FEATURES, ACCESSORIES AND ATTACHMENTS (CONT'D)

### Falling-Object Guards (FOGS)

Figure 4



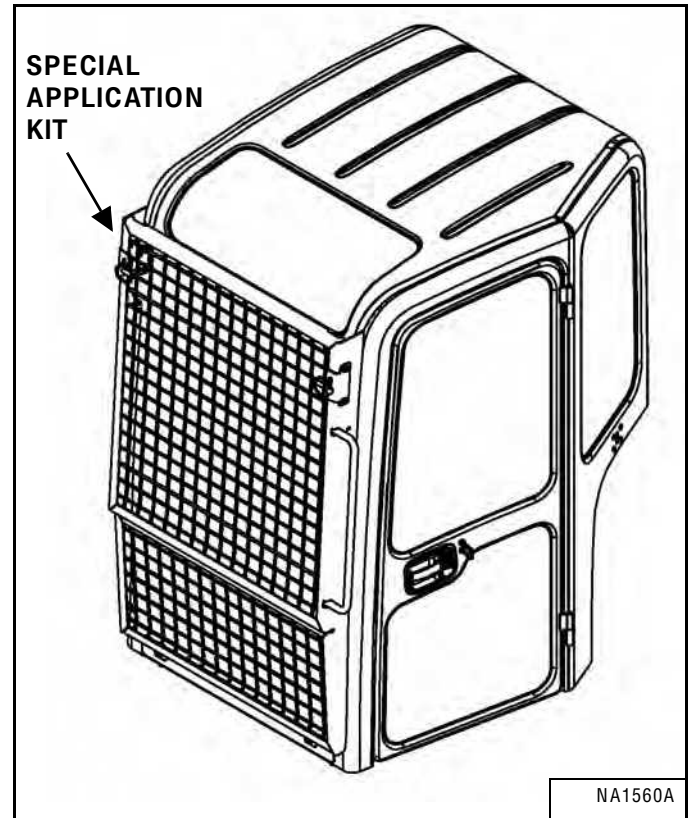
Available for special applications that require protection from smaller objects that can fall on the canopy / cab or restrict material from entering canopy / cab openings **[Figure 4]** and **[Figure 5]**.

The excavator must have the overhead guard **[Figure 4]** installed to meet the top guard requirements in ISO 10262.

See your Bobcat Dealer for more information.

### Special Applications Kit

Figure 5



The excavator must have the special applications kit **[Figure 5]** installed to meet the front guard requirements in FOGS ISO 10262 - level 1.

Kit includes an upper and lower screen guard.

See your Bobcat Dealer for more information.

### 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 AND TRAINING RESOURCES**

SAFETY INSTRUCTIONS .....	9
Before Operation .....	9
Safe Operation Is The Operator's Responsibility .....	10
Safe Operation Needs A Qualified Operator .....	10
Avoid Silica Dust .....	11
FIRE PREVENTION .....	11
Maintenance .....	11
Operation .....	11
Electrical .....	11
Hydraulic System .....	12
Fueling .....	12
Starting .....	12
Spark Arrester Exhaust System .....	12
Welding And Grinding .....	12
Fire Extinguishers .....	12
PUBLICATIONS AND TRAINING RESOURCES .....	13
MACHINE SIGNS (DECALS) .....	14
Pictorial Only Safety Signs .....	16

## 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. Its 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 websites **Bobcat.com/training** or **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.).

SI EXC-1016

## SAFETY INSTRUCTIONS (CONT'D)

### Safe Operation Is The Operator's Responsibility



#### Safety Alert Symbol

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



## WARNING

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

W-2001-0502

## IMPORTANT

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

I-2019-0284



## DANGER

The signal word DANGER on the machine and in the manuals indicates a hazardous situation which, if not avoided, will result in death or serious injury.

D-1002-1107



## WARNING

The signal word WARNING on the machine and in the manuals indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

W-2044-1107

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

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

### Safe Operation Needs A Qualified Operator

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

#### *A Qualified Operator Must Do The Following:*

##### *Understand the Written Instructions, Rules and Regulations*

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

##### *Have Training with Actual Operation*

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

##### *Know the Work Conditions*

- Know the weight of the materials being handled. Avoid exceeding the Rated Lift Capacity of the machine. Material that 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-1016

## 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 coolant 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-1016

## 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.

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

### Starting

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

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

### Spark Arrester Exhaust System

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

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

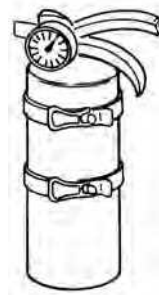
## Welding And Grinding

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.

## 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 products and the Bobcat Company, visit our Web site at **Bobcat.com/training** or **Bobcat.com**.



### OPERATION & MAINTENANCE MANUAL

6990723enUS

Complete instructions on the correct operation and the routine maintenance of your Bobcat excavator.



### OPERATOR'S HANDBOOK

6990434enUS

Gives basic operation instructions and safety warnings.



### SAFETY MANUAL

6901951 (English and Spanish)

Gives basic safety procedures and warnings for your Bobcat excavator.



### OPERATOR SAFETY DVD

6904762 (English and Spanish)

DVD gives basic safety instructions for many Bobcat products including excavators.



### COMPACT EXCAVATOR OPERATOR TRAINING COURSE

7249283 (English)  
7249286 (Spanish)

Introduces operator to step-by-step basics of skid-steer excavator operation.



### EXCAVATOR SERVICE SAFETY TRAINING COURSE

6900916

Introduces service technicians to step-by-step basics of proper and safe skid-steer excavator maintenance and servicing procedures.



### SERVICE MANUAL

6990724enUS

Complete maintenance instructions for your Bobcat excavator.



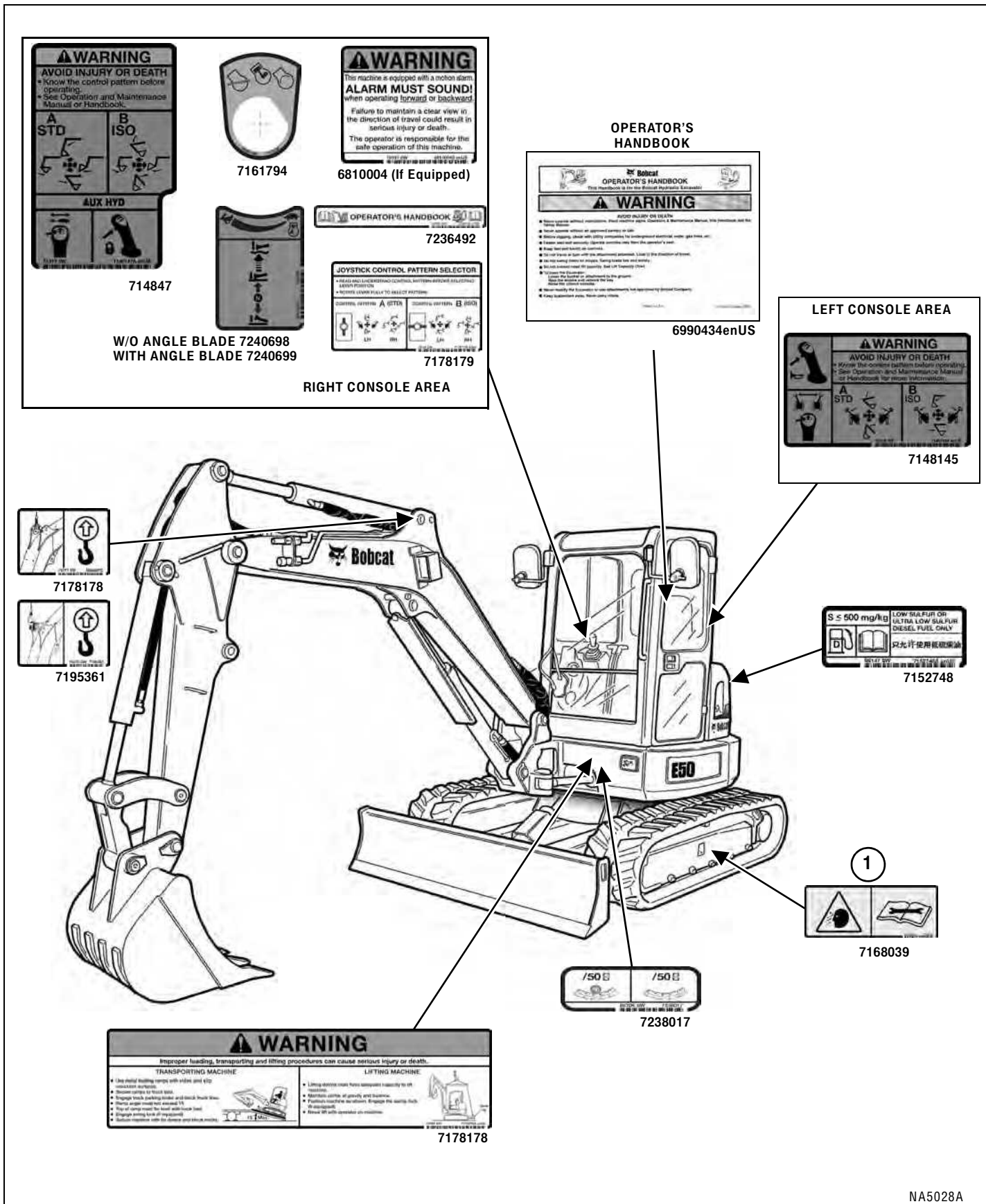
### EXCAVATOR SAFETY VIDEO

(Mobile device with quick response code application required)

Scan the code above to watch the excavator safety video or view at **Bobcat.com/training**.

## 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.

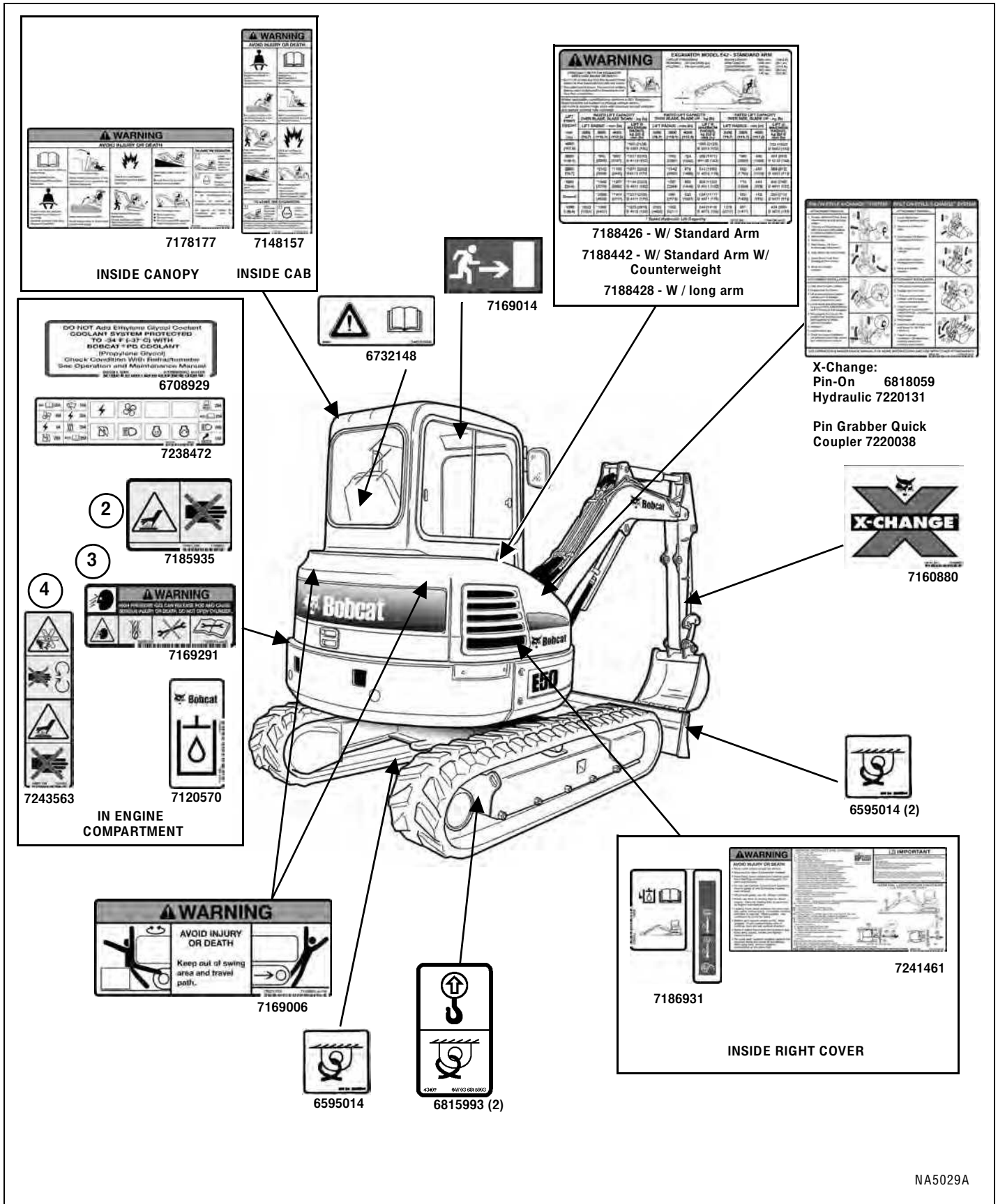


NA5028A



## 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.



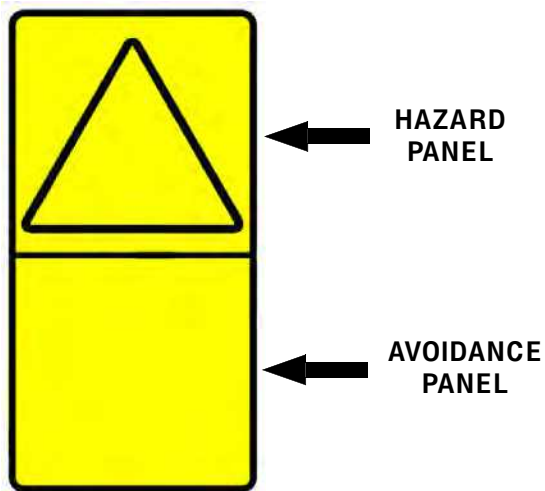
NA5029A

## MACHINE SIGNS (DECALS) (CONT'D)

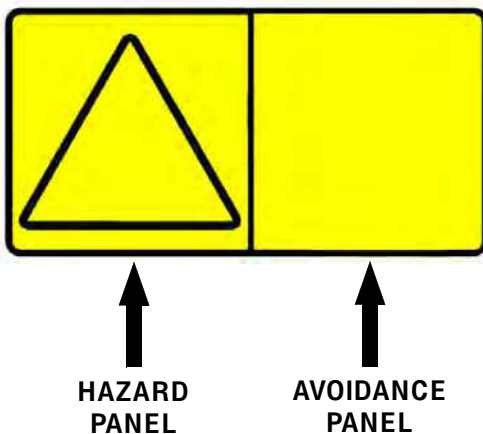
### Pictorial Only Safety Signs

Safety signs are used to alert the equipment operator or maintenance person to hazards that may be encountered in the use and maintenance of the equipment. The location and description of the safety signs are detailed in this section. Please become familiarized with all safety signs installed on the excavator.

*Vertical Configuration*



*Horizontal Configuration*



The format consists of the hazard panel(s) and the avoidance panel(s):

Hazard panels depict a potential hazard enclosed in a safety alert triangle.

Avoidance panels depict actions required to avoid the hazards.

A safety sign may contain more than one hazard panel and more than one avoidance panel.

**NOTE:** See the numbered MACHINE SIGNS (DECALS) on Page 14 and MACHINE SIGNS (DECALS) (Cont'd) on Page 15 for the machine location of each corresponding numbered pictorial only decals as shown below.

#### 1. Thrown Or Flying Objects (7168039)

This safety sign is located on the outside of both tracks.



High pressure grease can cause serious injury. Do not loosen grease fitting. Do not loosen bleed fitting more than 1 - 1/2 turns.

Read and understand the Operation & Maintenance Manual for more information.

W-2516-0110

## MACHINE SIGNS (DECALS) (CONT'D)

### Pictorial Only Safety Signs (Cont'd)

#### 2. Hot Surfaces (7185935)

This safety sign is located in the engine compartment.



#### AVOID BURNS

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

W-2070-1203

#### 3. Thrown or Flying Objects (7169291)

This safety sign is located on the gas spring in the engine compartment.



High pressure gas can cause serious injury or death.  
Do not open. Opening cylinder can release rod.

W-2523-0106

#### 4. Hot Surfaces and Rotating Fan (7243563)

This safety sign is located inside the engine compartment.



Rotating fan blade can cause serious injury or death.  
Keep away from fan and moving parts. Do not  
operate with guard removed.

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

W-2521-0106

## OPERATING INSTRUCTIONS

INTENDED USE .....	22
INSTRUMENTS AND CONSOLES .....	23
Cab Interior Light .....	23
Left Console .....	23
Right Console .....	24
Instrument Panel - Standard .....	25
Instrument Panel - Standard (Data Display Screen) .....	27
Instrument Panel - Deluxe .....	28
Radio Option .....	29
STD / ISO Selector Valve .....	31
Raising And Lowering The Console .....	31
Two-Speed Travel (Without Angle Blade Option) .....	32
Two-Speed Travel (With Angle Blade Option) .....	32
Auto-Shift Drive System .....	32
Auto Idle Feature .....	33
OPERATOR CANOPY (ROPS / TOPS) .....	34
Description .....	34
OPERATOR CAB (ROPS / TOPS) .....	34
Description .....	34
Cab Door .....	35
Front Window .....	36
Front Wiper .....	37
Window Washer Reservoir .....	37
Right Side Windows .....	38
Right Side Windows .....	39
Heating, Ventilation, And Air Conditioning Ducting .....	40
EMERGENCY EXIT .....	41
Right Side Rear Window .....	41
Front Window .....	41
MOTION ALARM SYSTEM .....	42
Operation .....	42
TRAVEL CONTROLS .....	43
Forward And Reverse Travel .....	43
Turning .....	43

HYDRAULIC CONTROLS .....	45
Description .....	45
STANDARD Control Pattern .....	45
ISO Control Pattern .....	46
Quick Couplers .....	47
Auxiliary Hydraulics - Standard Instrument Panel .....	48
Auxiliary Hydraulics - Deluxe Instrument Panel .....	49
Relieve Hydraulic Pressure With Standard Instrument Panel (Excavator And Attachment) .....	50
Relieve Hydraulic Pressure With Deluxe Instrument Panel (Excavator And Attachment) ..	50
Secondary Auxiliary Hydraulics .....	51
Relieve Secondary Auxiliary Hydraulic Pressure (Excavator And Attachment) .....	51
Return To Tank Valve .....	52
OVERLOAD WARNING .....	52
Description .....	52
Operation .....	52
BLADE CONTROL LEVER .....	53
Raising And Lowering Blade .....	53
Angling Blade (If Equipped) .....	53
ENGINE SPEED CONTROL DIAL .....	54
Setting Engine Speed (RPM) .....	54
ECO Mode (With Deluxe Instrument Panel Only) .....	54
BOOM SWING .....	55
Operation .....	55
BOOM LOAD HOLDING VALVE .....	56
Description .....	56
Lowering Boom With Load Holding Valve .....	56
ARM LOAD HOLDING VALVE .....	58
Description .....	58
Lowering Arm With Load Holding Valve .....	58
DAILY INSPECTION .....	60
Daily Inspection And Maintenance .....	60
PRE-STARTING PROCEDURE .....	61
Operation & Maintenance Manual And Operator's Handbook Locations .....	61
Entering The Excavator .....	61
Seat Adjustment .....	62
Seat Belt .....	62
Control Console .....	63
Mirror Adjustment .....	63

STARTING THE ENGINE .....	64
Key Switch .....	64
Keyless .....	65
Deluxe Instrument Panel .....	66
Warming The Hydraulic System .....	67
Cold Temperature Starting .....	67
Cold Temperature Engine Speed Control .....	67
MONITORING THE DISPLAY PANELS .....	68
Instrument Panel .....	68
Warning And Shutdown .....	68
STOPPING THE ENGINE AND LEAVING THE EXCAVATOR .....	69
Procedure .....	69
ATTACHMENTS .....	70
Installing And Removing The Attachment (Hydraulic X-Change) .....	70
Installing And Removing The Attachment (Pin Grabber Quick Coupler) .....	73
Installing And Removing The Attachment (Pin-On X-Change) .....	78
Installing And Removing The Attachment (Pin-On Attachment) .....	84
Installing And Removing The Pro Clamp System Tool .....	85
OPERATING PROCEDURE .....	92
Inspect The Work Area .....	92
Basic Operating Instructions .....	92
Lowering The Work Equipment (Engine STOPPED) .....	92
Object Handling .....	93
Object Handling With The Lifting Device .....	94
Lift Capacity .....	96
Using The Clamp (If Equipped) .....	98
Using The Pro Clamp System (If Equipped) .....	99
Boom Swing .....	100
Driving The Excavator .....	101
Operating On Slopes .....	102
Operating In Water .....	104
Avoiding Track Damage .....	105
DEPTH CHECK .....	106
Setup / Calibration .....	106
Initial Setup .....	116
Operation .....	123
TOWING THE EXCAVATOR .....	129
Procedure .....	129
LIFTING THE EXCAVATOR .....	130
Procedure .....	130

TRANSPORTING THE EXCAVATOR ON A TRAILER .....131

    Loading And Unloading .....131

    Fastening .....131

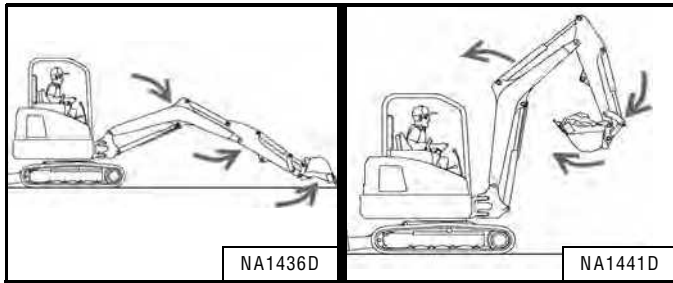
## INTENDED USE

This machine is classified as an Excavator as defined in ISO 6165. This machine has tracks and commonly a mounted bucket for the principle intended functions of excavating, loading and backfilling loose materials such as earth, gravel, or crushed rock.

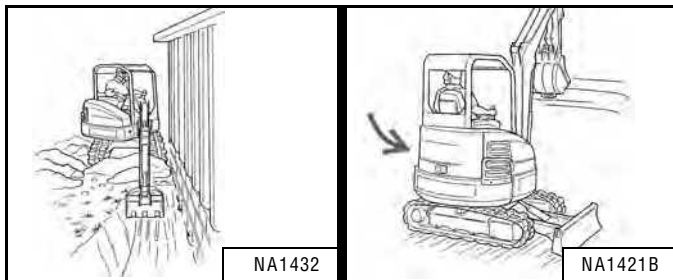
Additional Bobcat approved attachments allow this machine to perform other tasks described in the attachment Operation & Maintenance Manuals.

Examples of intended use include:

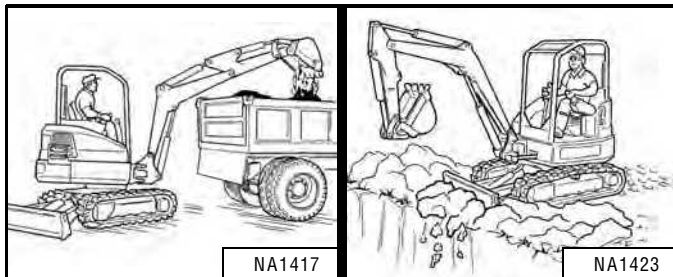
### Excavating



### Boom Swing



### Loading Material



### Backfilling

## ! WARNING

### AVOID INJURY OR DEATH

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

W-2374-0500

## ! 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 3 m (10 ft)
230 kV	At least 5 m (17 ft)
740 kV	At least 10 m (33 ft)

W-2757-0910

## ! WARNING

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

W-2119-0910

## IMPORTANT

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

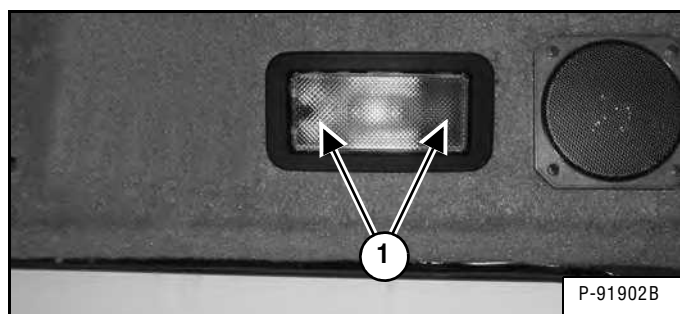
I-2256-0507



## INSTRUMENTS AND CONSOLES

### Cab Interior Light

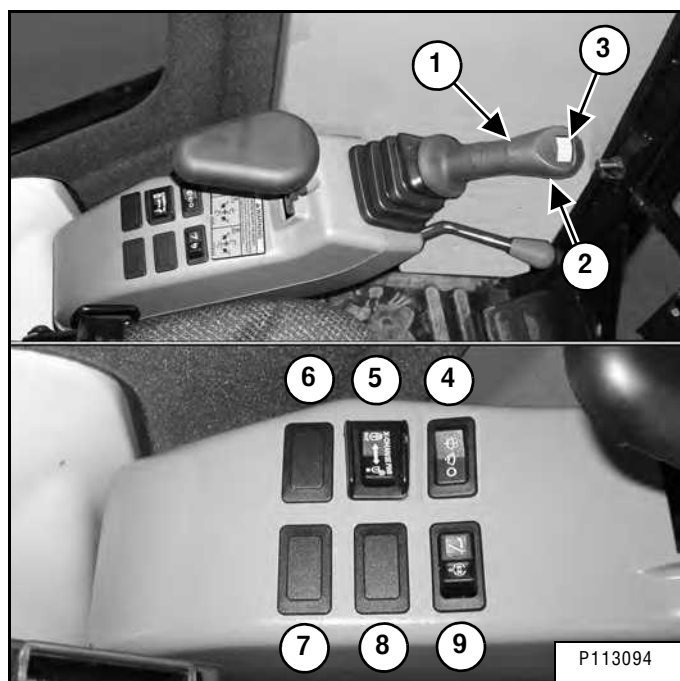
Figure 6



If equipped with a cab, press either side of the lens (Item 1) **[Figure 6]** to turn the light ON. Return the LENS to the center position to turn OFF.

### Left Console

Figure 7



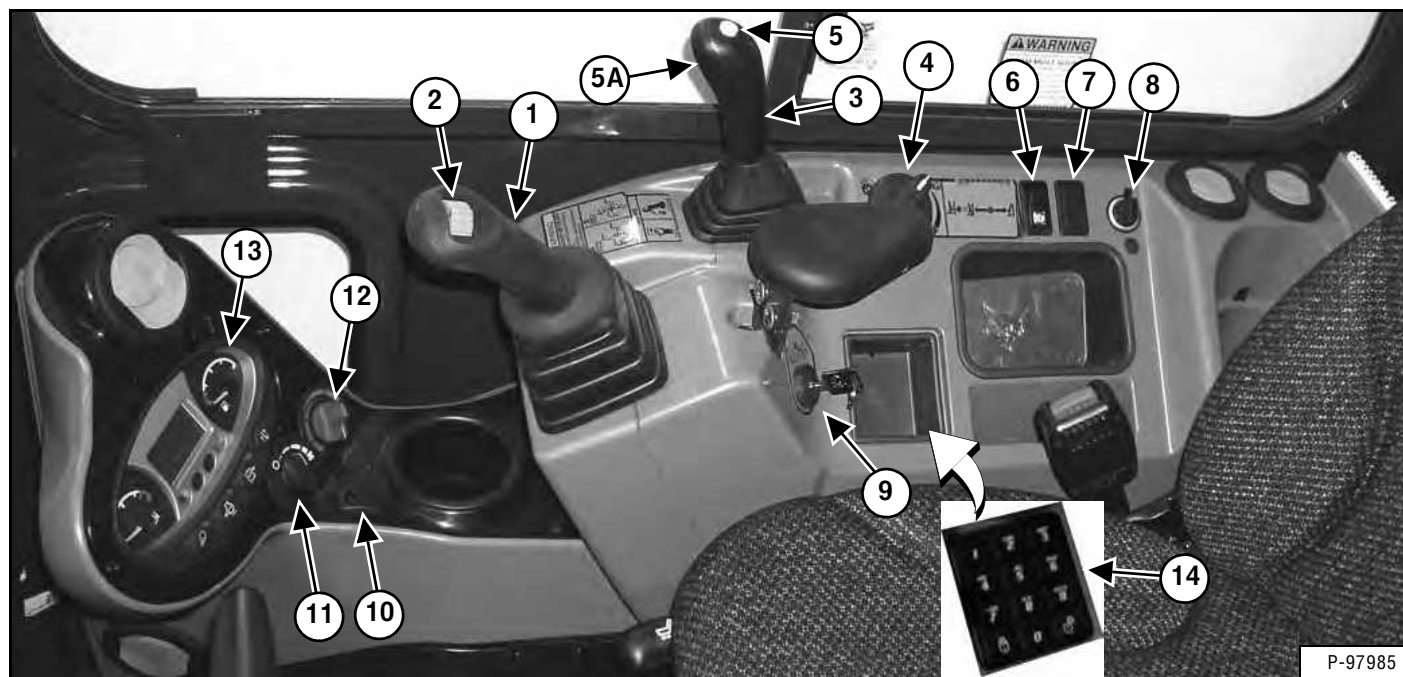
Left Console **[Figure 7]**

REF. NO.	DESCRIPTION	FUNCTION / OPERATION
1	Left Joystick	(See HYDRAULIC CONTROLS on Page 45.)
2	Horn	Press the switch on the bottom of the left joystick to sound horn.
3	Boom Swing Switch / Secondary Auxiliary Hydraulic (If Equipped)	Move the switch to the left to swing the boom to the left. Move the switch to the right to swing the boom to the right. (See Secondary Auxiliary Hydraulics on Page 51.) (See Boom Swing on Page 100.)
4	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. Press the switch to the right to turn wiper OFF.
5	Hydraulic X-Change Switch (If Equipped)	Press and hold the switch to the right to fully retract hydraulic pins. Press and hold the switch to the left to fully extend hydraulic pins.
	Pin Grabber Quick Coupler ON / OFF Switch (If Equipped)	Press switch to the left to turn the pin grabber quick coupler ON. Press the switch to the right to turn OFF.
6	Beacon / Strobe Light (If Equipped)	Press switch to the left to turn ON the beacon / Strobe light. Press the switch to the right to turn OFF.
7	Pin Grabber Quick Coupler INTENT Switch (If Equipped)	Press switch to the left to initiate the quick coupler install or remove mode. (See Installing And Removing The Attachment (Pin Grabber Quick Coupler) on Page 73.)
8	OVERLOAD WARNING SWITCH (If Equipped)	Press switch to the right to enable Overload Warning feature. Press to the left to disable. (See OVERLOAD WARNING on Page 52.)
9	Boom Swing Switch / Secondary Auxiliary Hydraulic (If Equipped)	Move the switch to the right to activate the secondary auxiliary hydraulics. Move the switch to the left for boom swing function. (See Secondary Auxiliary Hydraulics on Page 51.) (See Boom Swing on Page 100.)

## INSTRUMENTS AND CONSOLES (CONT'D)

### Right Console

Figure 8



P-97985

REF	DESCRIPTION	FUNCTION / OPERATION
1	Right Joystick	(See HYDRAULIC CONTROLS on Page 45.)
2	Auxiliary Hydraulic Switch	Controls the fluid flow to the auxiliary quick couplers (attachment).(See Auxiliary Hydraulics - Standard Instrument Panel on Page 48.)
3	Blade Control Lever	Controls raising and lowering the blade. Pushed all the way forward puts blade in float position. (See BLADE CONTROL LEVER on Page 53.)
4	Engine Speed Control Dial	Controls rpm of the engine. (See ENGINE SPEED CONTROL DIAL on Page 54.)
5	Two-Speed Button (Without Angle Blade Option)	Engages and disengages High Range Travel Speed. (See Two-Speed Travel (Without Angle Blade Option) on Page 32.)
5A	Two-Speed Button (With Angle Blade Option)	Engages and disengages High Range Travel Speed. (See Two-Speed Travel (With Angle Blade Option) on Page 32.)
6	Motion Alarm Cancel Switch	This switch temporarily disables the motion alarm. (See MOTION ALARM SYSTEM on Page 42.)
7	Not Used	---
8	Auxiliary Power Outlet	12 volt receptacle for accessories.
9	Key Switch	Always perform the PRE-STARTING PROCEDURE before starting the engine. (See PRE-STARTING PROCEDURE on Page 61.) (See STARTING THE ENGINE on Page 64.)
10	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.
11	Fan Motor Switch (If Equipped)	Turn clockwise to increase fan speed; counterclockwise to decrease.
12	Temp. Control (If Equipped)	Turn clockwise to increase temperature; counterclockwise to decrease.
13	Instrument Panel	See Standard or Deluxe Instrument Panel
14	Keyless (If Equipped)	Always perform the PRE-STARTING PROCEDURE before starting the engine. (See PRE-STARTING PROCEDURE on Page 61.) (See STARTING THE ENGINE on Page 64.)

**NOTE:** Always turn key switch and all accessories to OFF position when the engine is stopped, the battery will discharge if the key is left ON.

## INSTRUMENTS AND CONSOLES (CONT'D)

### Instrument Panel - Standard

Figure 9



P-97989

REF. NO.	DESCRIPTION	FUNCTION / OPERATION
1	LIGHTS	Press once for work lights. (Left green LED illuminates.) Press again to turn all lights off. (Left green LED off.) Press and hold 5 seconds to display software version in display screen.
2	Auto Idle Feature	Press once to turn Auto Idle Feature ON. (Left green LED illuminates.) Press a second time to turn OFF. (Left and right green LEDs off.) (See Auto Idle Feature in this manual).
3	Auxiliary Hydraulic Button	Press once to enable auxiliary hydraulic function. (Left green LED illuminates.) Continue to press and release to scroll through the selectable auxiliary hydraulic setting (3-2-1-OFF). Press and hold (minimum of one second) to enable the continuous flow auxiliary hydraulic feature. (Right green LED illuminates.) Continue to press and release to scroll through the continuous flow selectable auxiliary hydraulic settings (3-2-1-OFF). (See Auxiliary Hydraulics - Standard Instrument Panel on Page 48.)
4	Information	Cycles through (after each button press) (The following information is displayed in the Data Display Screen, Item 6): <ul style="list-style-type: none"> <li>• Hourmeter (On startup)</li> <li>• Job Clock (1 and 2) (Press and hold 7 seconds when displayed to reset the job clock.)</li> <li>• Engine rpm</li> <li>• Battery voltage</li> <li>• Maintenance clock (Press and hold 7 seconds when displayed to reset the maintenance clock.)</li> <li>• Service codes*</li> </ul>
5	Engine Temperature Gauge	Shows the engine coolant temperature.

## INSTRUMENTS AND CONSOLES (CONT'D)

### Instrument Panel - Standard (Cont'd)

REF. NO.	DESCRIPTION	FUNCTION / OPERATION
6	Data Display Screen	The data display screen shows the Hourmeter at start up and then changes to engine rpm during normal operation of the excavator. When preheat is activated, the display screen will show the remaining preheat time. Can also be used to display Job Clock, Engine rpm, and Selectable Auxiliary Hydraulic Flow. (See Instrument Panel - Standard (Data Display Screen) on Page 27.)
7	Fuel Gauge	Shows the amount of fuel in the tank.
8	Seat Belt	Fasten Seat Belt Reminder - Light stays on for 45 seconds to remind operator to fasten seat belt.
9		Not used for this model.
10		Not used for this model.
11	Left Console Lockout	Icon ON when left console is raised. Icon OFF when left console is lowered.
12	General Warning **	Malfunction with one or more machine functions. (See DIAGNOSTIC SERVICE CODES on Page 184.)
13	High Range Engaged ***	Icon is illuminated when two-speed travel is enabled.
14	Engine Coolant Temperature **	Engine coolant temperature high or sensor error.
15	Engine Malfunction **	Engine malfunction or failure.
16	Hydraulic System Malfunction **	Hydraulic system malfunction or failure.
17	Fuel	Fuel level low or sensor error. (Icon is ON when fuel level is low, Icon flashes when fuel sensor fault is activated.)
18		Not used for this model.
19		Not used for this model.
20		Not used for this model.
21		Not used for this model.

\* See SYSTEM SETUP AND ANALYSIS for Service Code Description. (See DIAGNOSTIC SERVICE CODES on Page 184.)

\*\* Icons will be ON or flashing when diagnostic system indicates a problem. (See DIAGNOSTIC SERVICE CODES on Page 184.)

\*\*\* Icons will be flashing when diagnostic system indicates a problem. (See DIAGNOSTIC SERVICE CODES on Page 184.)

## INSTRUMENTS AND CONSOLES (CONT'D)

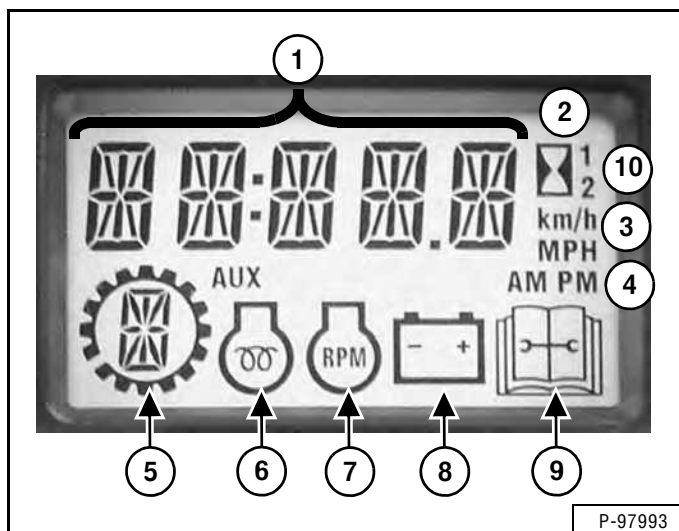
### Instrument Panel - Standard (Data Display Screen)

#### *Indicator Icons*

The display screen can display the following information:

- Operating hours
- Job Clock (1 and 2)
- Engine rpm
- Battery voltage
- Maintenance clock countdown
- Service codes

**Figure 10**



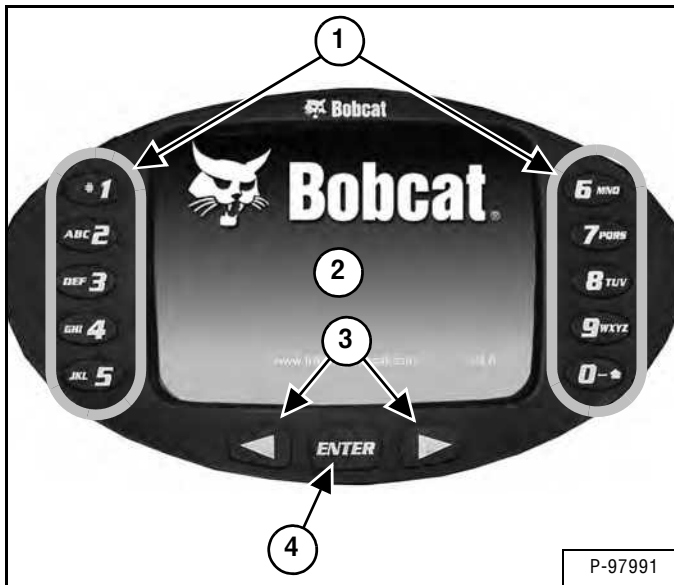
The display screen is shown in [Figure 10]. The data display will show operating hours upon startup.

1. **Data Display**
2. **Hourmeter**
3. **Metric / English (Not Used For This Model)**
4. **Clock (Not Used For This Model)**
5. **Selectable Auxiliary Flow (3 - 2 - 1)**
6. **Engine Preheat**
7. **Engine RPM**
8. **Battery / Charging Voltage**
9. **Service**
10. **Job Clock (1 and 2)**

## INSTRUMENTS AND CONSOLES (CONT'D)

### Instrument Panel - Deluxe

Figure 11



This machine may be equipped with a Deluxe Instrument Panel [Figure 11].

1. **Keypad (1 through 0):** The keypad has two functions:
  - To enter a number code (password) to allow starting the engine.
  - To enter a number as directed for further use of the display screen.
2. **Display Screen:** The display screen is where all system setup, monitoring, and error conditions are displayed.
3. **Scroll Buttons:** Used to scroll through display screen choices.
4. **ENTER Button:** Used to make selections on the display screen.

Figure 12



Turn the start key to the ON position.

When this screen is on the display you can enter the password and start the engine [Figure 12].

**NOTE:** Your excavator (with Deluxe Instrument Panel) will have an Owner Password. Your dealer will provide you with this password. Change the password to one that you will easily remember to prevent unauthorized use of your excavator. (See Changing The Owner Password on Page 197.) Keep your password in a safe location for future needs.

#### *Enter The Password:*

Use the numbers on the keypad to enter the password, then press the **[ENTER]** button. A symbol will appear on the display screen for each number entered. The left scroll button can be used to backspace if an incorrect number is entered.

If the correct password is not entered, **[INVALID PASSWORD]** will appear on the display screen and the password will have to be reentered.

See CONTROL PANEL SETUP for further description of screens to set up the system for your use. (See CONTROL PANEL SETUP on Page 190.)

#### *Lights*

Press key pad [1] [Figure 12] once for FRONT work lights. Press a second time to turn all lights off.

#### *Change Language:*

The language can be changed at any time. (See CONTROL PANEL SETUP on Page 190.)

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



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