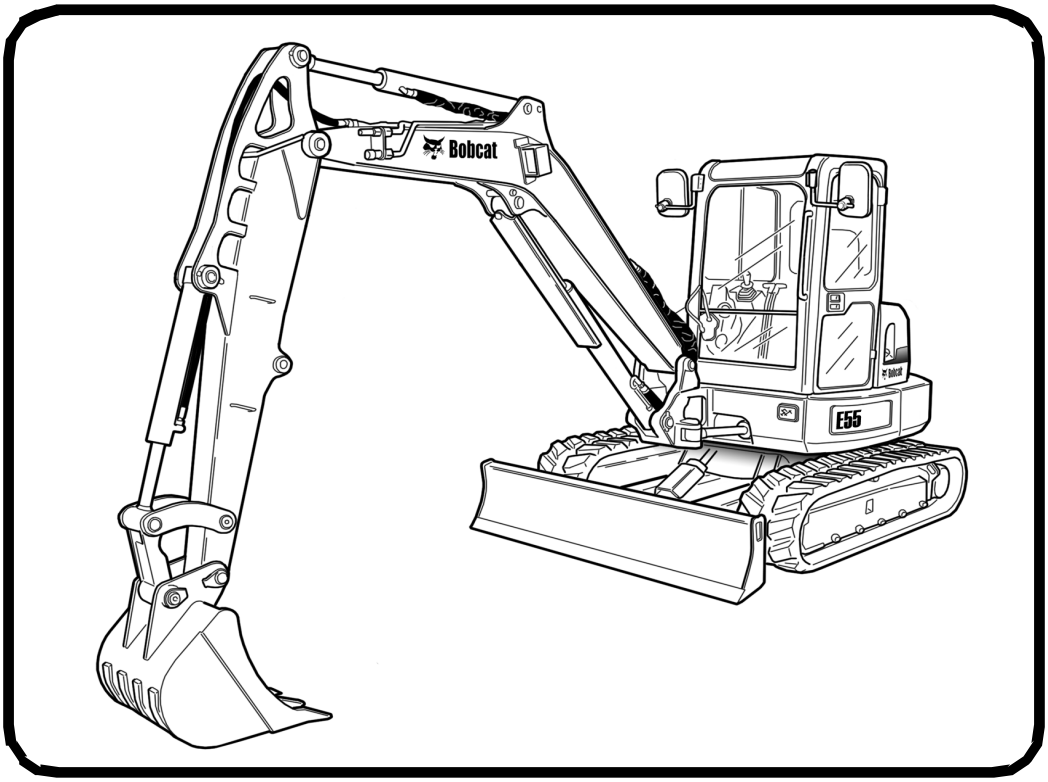
Bobcat®

Operation & Maintenance Manual
E55 Compact Excavator

S/N B3NP11001 & Above

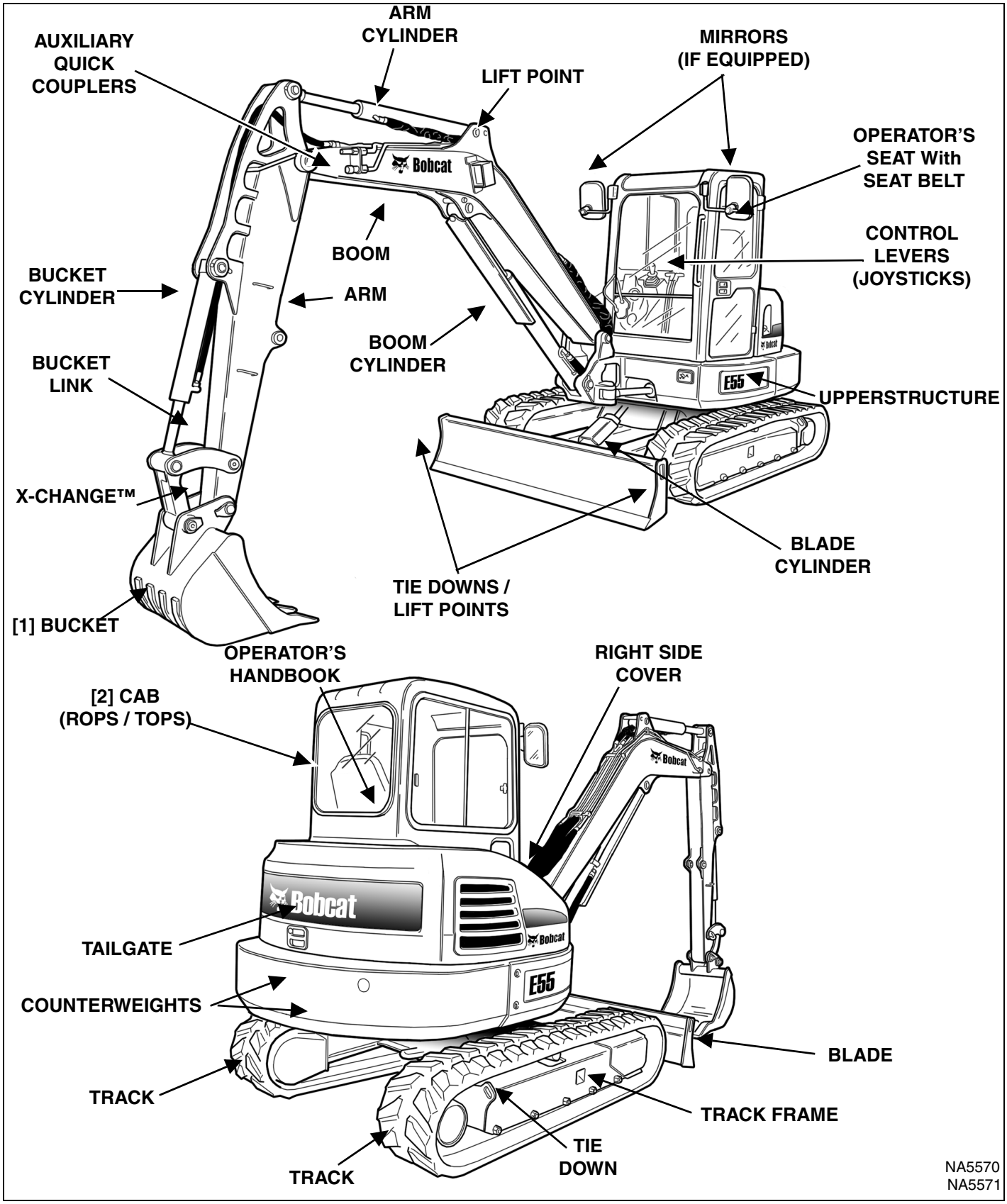


7300143enUS (03-20) (B)

Printed in Belgium

LAAP NA iT4

EXCAVATOR IDENTIFICATION



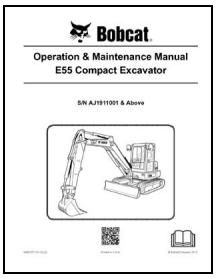
[1] BUCKET - Several different buckets and other attachments are available for the Bobcat excavator.

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

PUBLICATIONS AND TRAINING RESOURCES

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

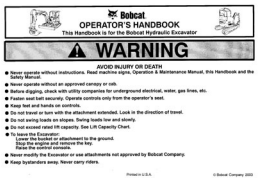
For the latest information on Bobcat products and the Bobcat Company, visit our Web site at **Bobcat.com/training** or **Bobcat.com**.



OPERATION & MAINTENANCE MANUAL

7300143enUS

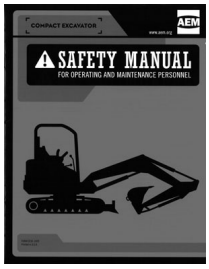
Complete instructions on the correct operation and the routine maintenance of your Bobcat excavator.



OPERATOR'S HANDBOOK

6990434enUS

Gives basic operation instructions and safety warnings.



SAFETY MANUAL

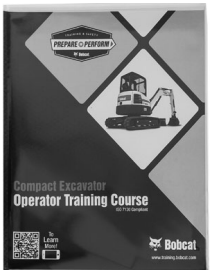
6901951 (English and Spanish)

Gives basic safety procedures and warnings for your Bobcat excavator.

OPERATOR SAFETY DVD

6904762 (English and Spanish)

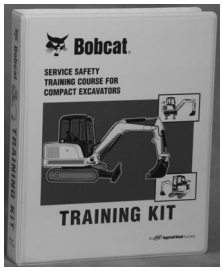
DVD gives basic safety instructions for many Bobcat products including excavators.



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

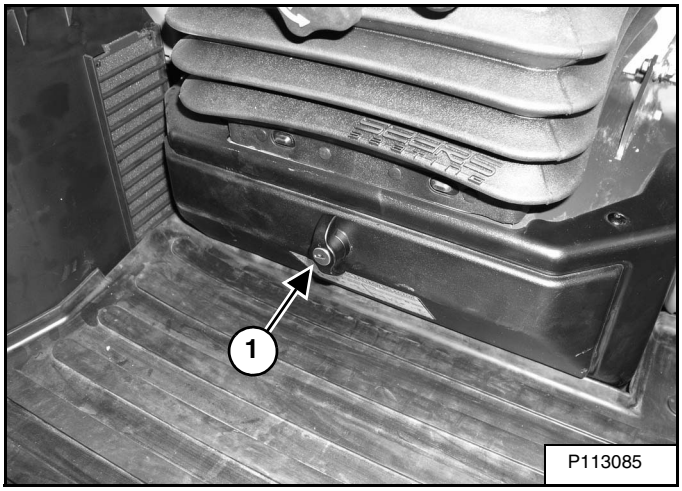
6990093enUS

Complete maintenance instructions for your Bobcat excavator.

STD / ISO Selector Valve

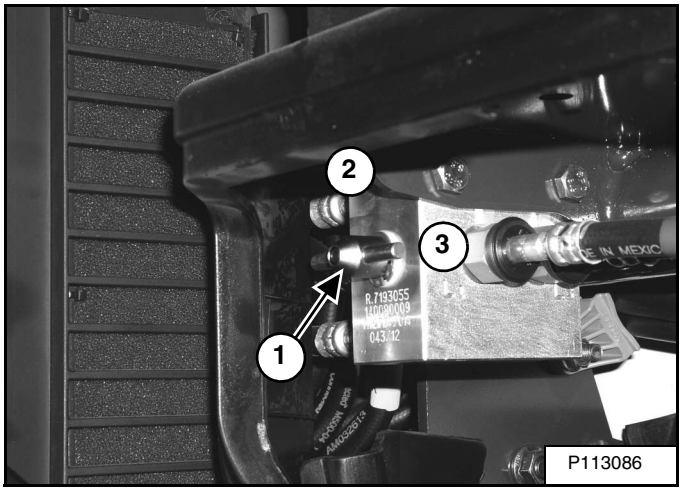
The STD / ISO selector valve is located below the operator's seat, inside the tool box.

Figure 17



From below the operator's seat, open the tool box cover (Item 1) **[Figure 17]**.

Figure 18



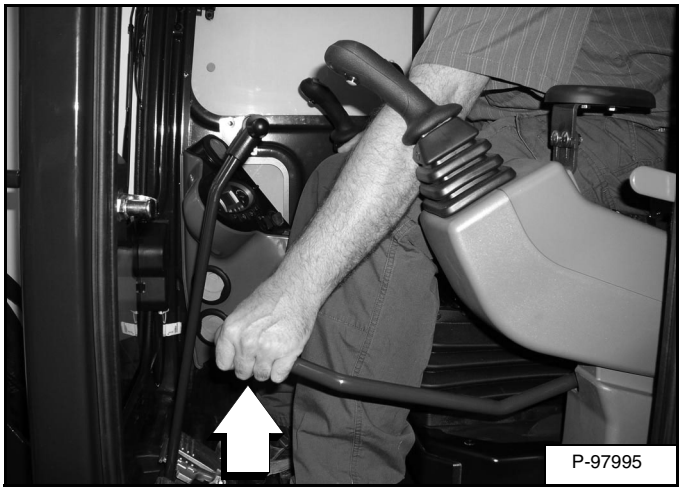
The joystick hydraulic function can be switched from Standard control pattern to ISO control pattern.

Rotate the lever (Item 1) counterclockwise (Item 2) to select STANDARD Control Pattern. Rotate the lever clockwise (Item 3) to select ISO Control Pattern **[Figure 18]**.

Raising And Lowering The Console

Raise the console before exiting the cab.

Figure 19



Pull up on the release handle **[Figure 19]**. The lift spring will assist in raising the console.

Lower the console before operating the excavator.

Push down on the lever **[Figure 19]** until the latch is engaged.

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

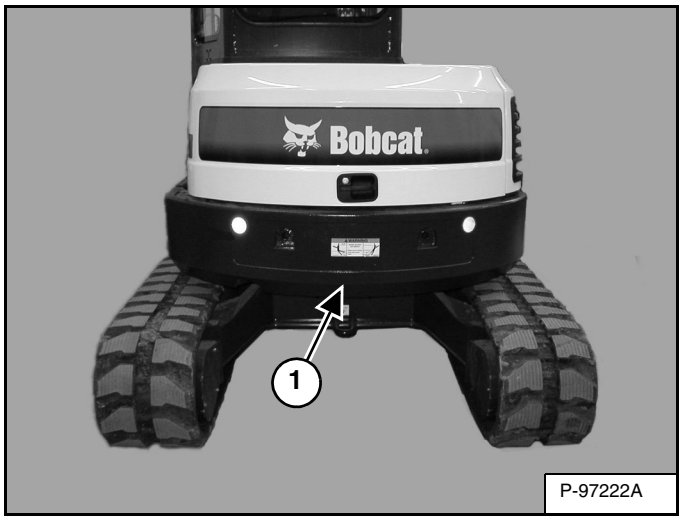
If the engine stops, the boom / bucket (attachments) can be lowered to the ground using hydraulic pressure in the accumulator.

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

MOTION ALARM SYSTEM

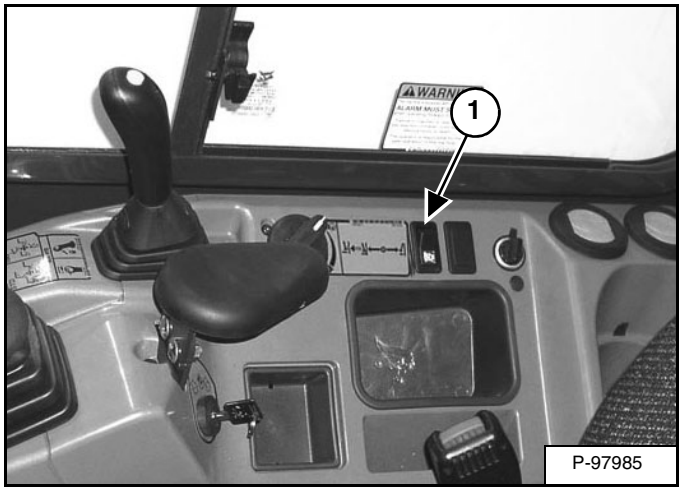
Operation

Figure 42



This excavator may be equipped with a motion alarm system. The motion alarm (Item 1) **[Figure 42]** is located inside the rear of the excavator.

Figure 43



The motion alarm can be temporarily disabled by pressing the motion alarm switch (Item 1) **[Figure 43]** while the machine is moving. As soon as the travel levers are returned to the NEUTRAL position, the motion alarm will be enabled.

⚠ 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 (Item 1) **[Figure 44]** in either the forward or reverse direction.

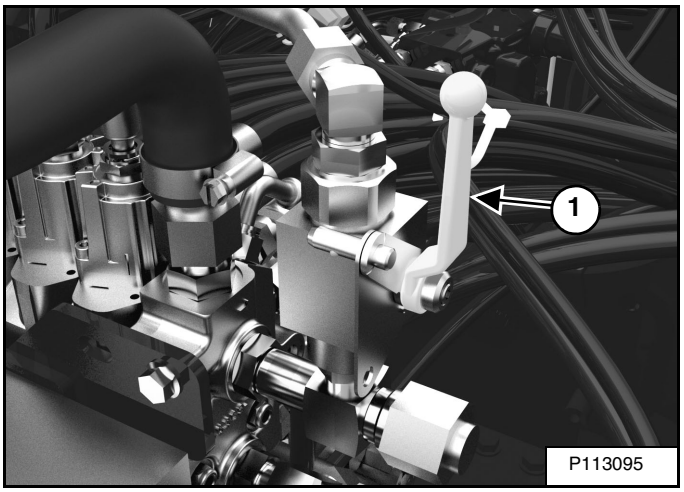
If alarm does not sound or for adjustment instructions, see inspection and maintenance instructions for the motion alarm system in the preventive maintenance section of this manual. (See MOTION ALARM SYSTEM on Page 157.)

HYDRAULIC CONTROLS (CONT'D)

Return To Tank Valve

The return to tank valve is located under the right side cover at the front of the control valve (if equipped).

Figure 66



Rotate the lever (Item 1) **[Figure 66]** clockwise to direct auxiliary return hydraulic fluid to the reservoir.

Rotate the lever (Item 1) **[Figure 66]** counterclockwise for two way hydraulic auxiliary flow operation.

OVERLOAD WARNING

Description

The overload warning feature, when engaged, will alert the operator with a warning buzzer and the general warning icon on the instrument panel when the work group is overloaded.

If overload occurs, immediately bring the arm toward the machine, lower the boom and reduce the load before continuing operation.

Operation

Figure 67

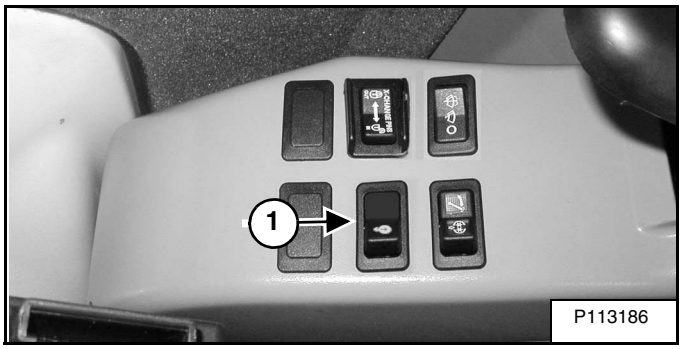
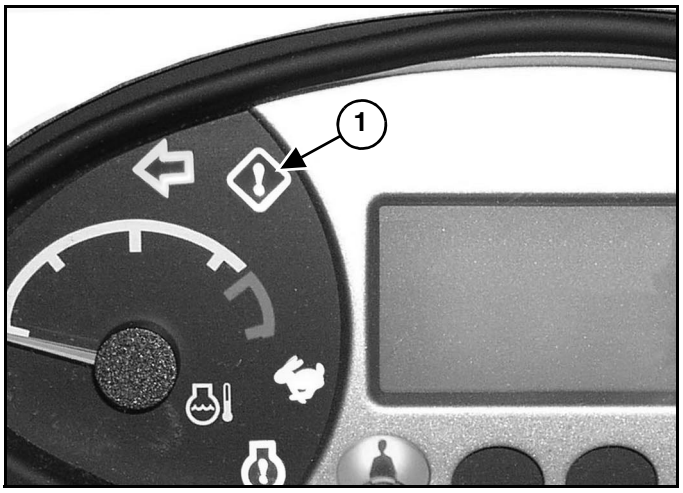


Figure 68



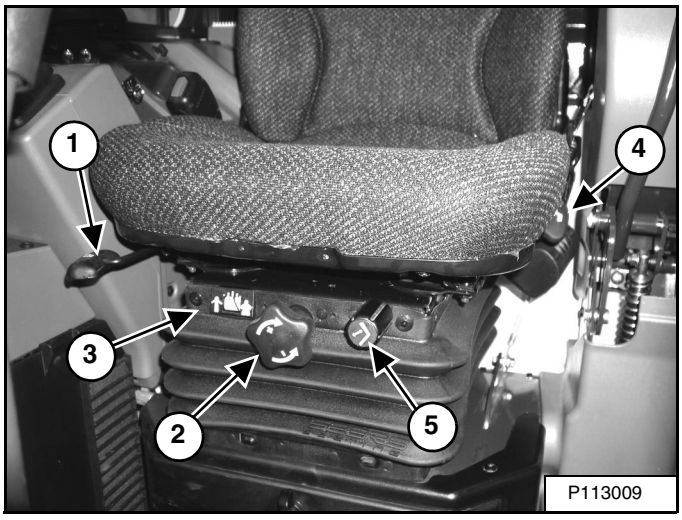
Press the switch (Item 1) **[Figure 67]** to the right to enable the Overload Warning Feature.

A buzzer will sound and the general warning icon (Item 1) **[Figure 68]** will illuminate when the boom is overloaded.

To disengage the overload warning feature, press the switch (Item 1) **[Figure 67]** to the left. The icon (Item 1) **[Figure 68]** will turn off when the overload warning feature is disabled.

Seat Adjustment

Figure 86



Release the seat lever (Item 1) **[Figure 86]** to adjust the seat forward or back.

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 86]**.

Release the lever (Item 4) **[Figure 86]** to change the incline of the seat back.

Sit in the seat and turn the knob (Item 5) **[Figure 86]** to adjust the height of the seat.

Seat Belt

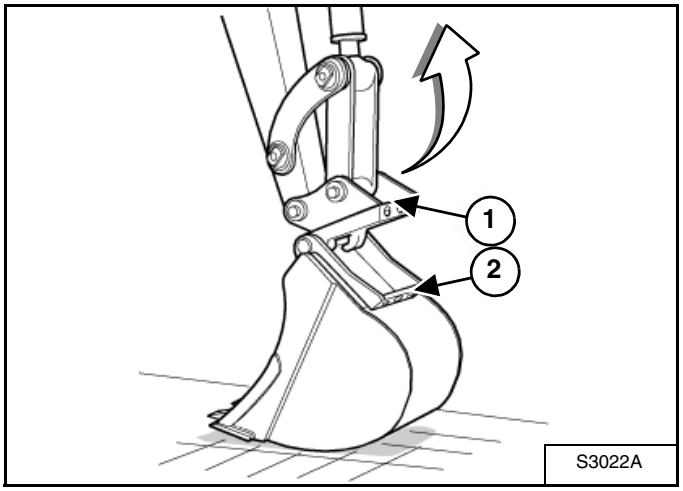
Figure 87

Fasten the seat belt **[Figure 87]**.

Installing And Removing The Attachment (Quick Coupler, Lehnhoff® System) (Cont'd)

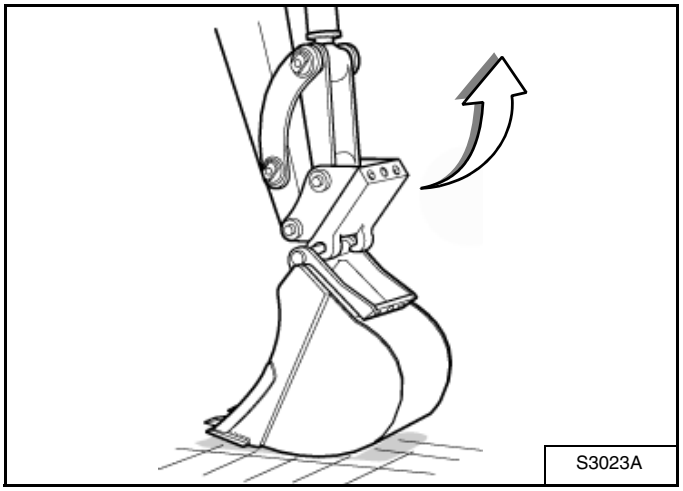
Removal (Cont'd)

Figure 110



Retract the bucket cylinder to rotate the coupler (Item 1) out of the attachment mount (Item 2) **[Figure 110]**.

Figure 111



Move the arm out and raise the boom until the quick coupler is clear of the attachment **[Figure 111]**.

Quick Coupler And Attachment Inspection

Inspect the quick coupler for wear or damage. Inspect the attachment shaft and the quick coupler hooks for wear or damage.

Repair or replace damaged parts.

Installing And Removing The Attachment (Pin-On 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.

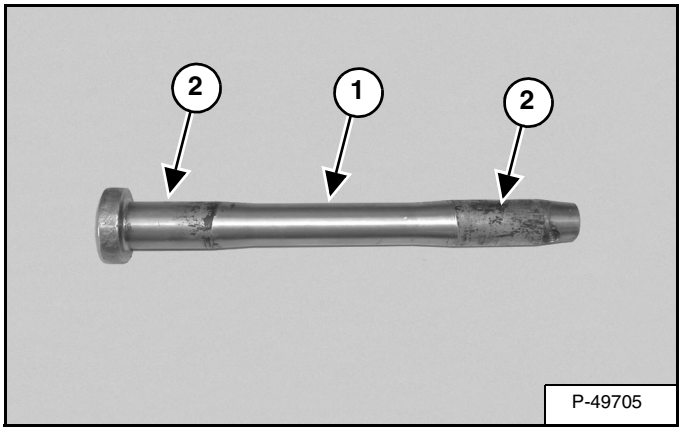
W-2052-0907

⚠ 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 138



Inspect the pin (Item 1) **[Figure 138]** for wear or damage. Replace the pin as needed.

Apply a light coat of grease to the ends of the pin (Item 2) **[Figure 138]**.

Figure 139

Start the engine and move the arm toward the bucket **[Figure 139]**.

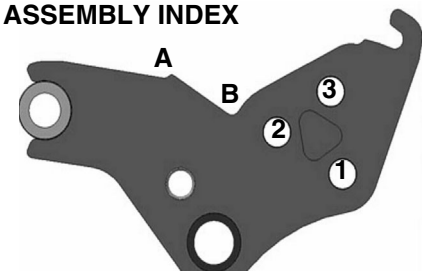
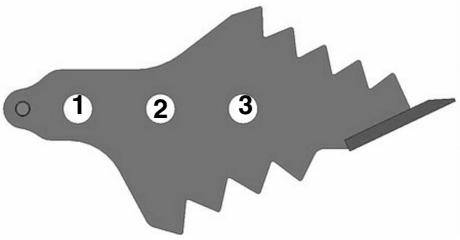
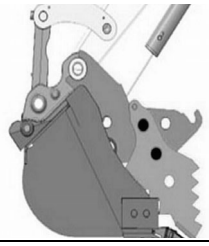
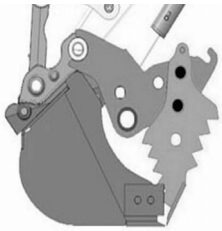
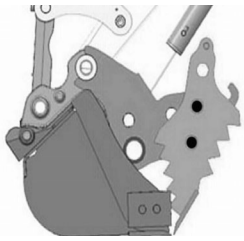
ATTACHMENTS (CONT'D)

Installing And Removing The Pro Clamp™ System Tool (Cont'd)

Installation (Cont'd)

Grading And Clam Tool Arrangements

Figure 157

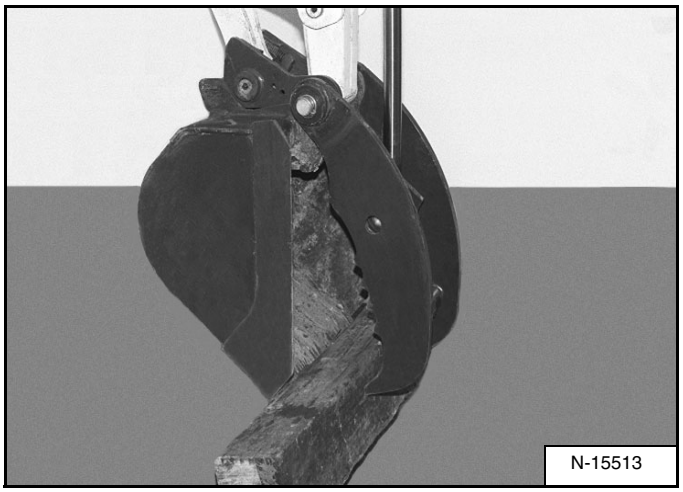
PRO CLAMP™ SYSTEM 3 APPROVED TOOL ARRANGEMENTS								
USE CHECKED INDEX POINT WHEN INSTALLING TOOL. **INSTALL MOUNTING PINS IN CHECKED MOUNTING HOLES.**	**BASE ASSEMBLY INDEX** 					**GRADING & CLAM TOOL INDEX*** 		
APPROVED TOOL POSITIONS	**INDEX**	**POINT**	**MOUNTING HOLE**			**MOUNTING HOLE**		
	A	**B**	**1**	**2**	**3**	**1**	**2**	**3**
TOOTHED DIRT BUCKET ** 		X	X	X		X	X	
TOOTHLESS DIRT BUCKET 		X	X		X	X	X	
GRADING BUCKET 	X		X		X		X	X

* Grading And Clam Tool Weight: 30 kg (65 lb)

**** Note: See the correct operating procedure when using the grading tool for grading. (See Using The Pro Clamp™ System (If Equipped) on Page 110.)**

Using The Clamp (If Equipped)

Figure 176



The optional lifting clamp attachment gives the excavator a wider range of use and mobility for debris removal **[Figure 176]**.

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

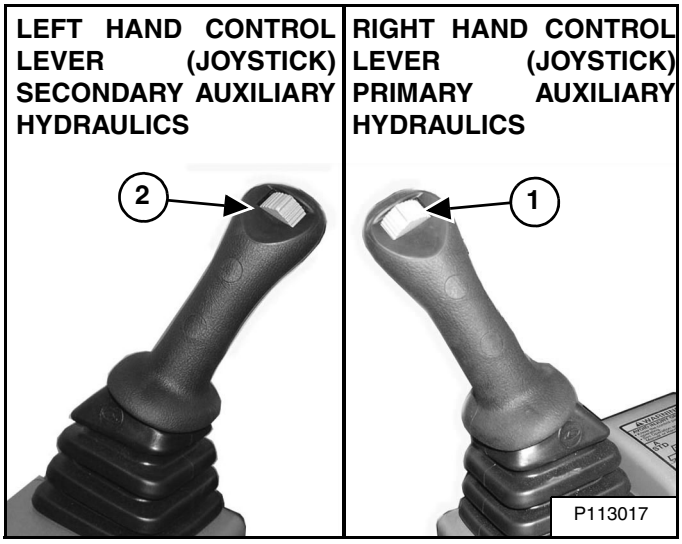
The lift capacities are reduced by 122 Kg (270 lb) if the excavator is equipped with the optional lifting clamp.

NOTE: Use care when operating the bucket and clamp functions on machines equipped with an X-Change and without a bucket or attachment installed. Cylinder damage can occur due to contact between the X-Change and the clamp when both cylinders are fully extended.

When Using Primary Auxiliary Hydraulics To Activate Clamp

Engage the auxiliary hydraulics and toggle to the Aux2 setting. (See Auxiliary Hydraulics - Standard Instrument Panel on Page 55.)

Figure 177



Move the switch (Item 1) **[Figure 177]** on the right control lever to the right to open the clamp. Move the switch to the left to close the clamp.

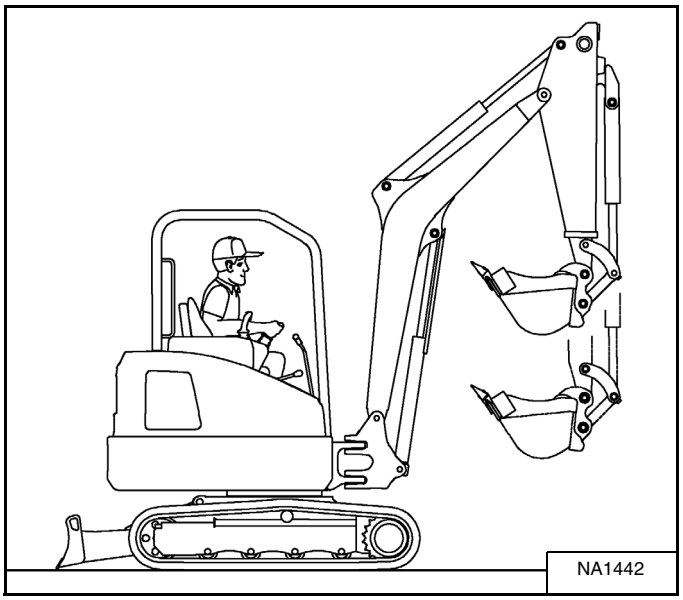
When Using Secondary Auxiliary Hydraulics To Activate Clamp

Move the switch (Item 2) **[Figure 177]** on the left control lever to the left open the clamp. Move the switch to the right to close the clamp.

NOTE: The lifting clamp will be connected to the secondary auxiliary hydraulic quick couplers when equipped with the optional extendable arm.

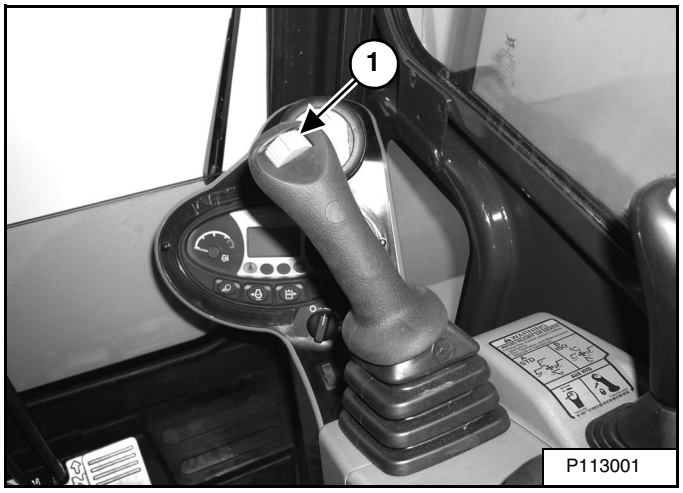
Extending The Arm (Cont'd)

Figure 202



Engage the auxiliary hydraulics and select the selectable auxiliary hydraulic flow, Aux3 setting. (See Auxiliary Hydraulics - Standard Instrument Panel on Page 55.) or (See Auxiliary Hydraulics - Deluxe Instrument Panel on Page 56.)

Figure 203



Move the switch (Item 1) **[Figure 203]** on the right control lever to the right to extend the arm or to the left to retract the arm **[Figure 202]**.

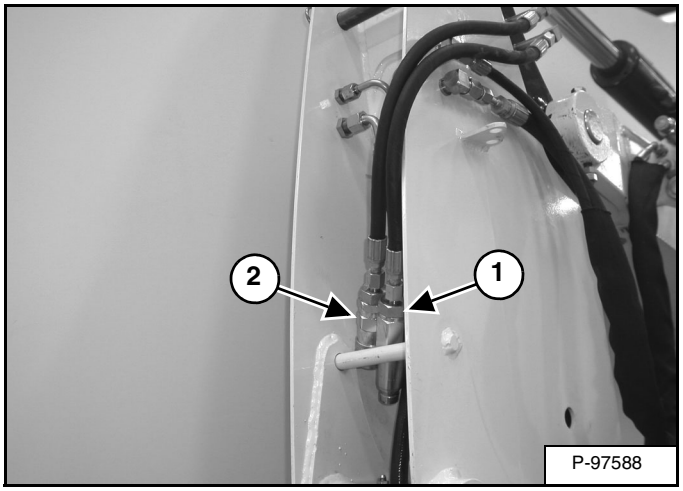
⚠ WARNING

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

NOTE: When transporting the excavator, when using hydraulically operated attachments, or when lifting objects, the extendable arm must be locked in the retracted position. Fully retract the arm and install the pin and the retainer pin in the locked position. (See Extending The Arm on Page 118.)

Figure 204



When the extendable arm hydraulic couplers (Items 1 and 2) **[Figure 204]** are disconnected, store the couplers by positioning them between the front of the arm and the bucket cylinder.

Setup / Calibration (Cont'd)

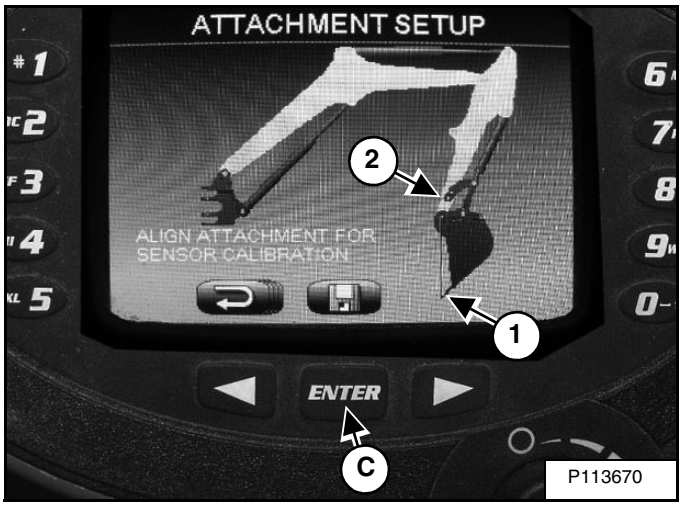
Figure 231

Install a magnetic pin on the second bucket pin (Item 3) **[Figure 230]**.

The next measurement is from the cutting edge (Item 4) to the center of the magnetic pin (Item 5) **[Figure 230]** for the outside length dimension.

Using the keypad (Items 1 through 0) **[Figure 231]** enter this dimension. After the measurement is entered and verified, press the **[ENTER]** button (Item C) **[Figure 231]**. As soon as the **[ENTER]** button is pressed, the screen will change to the **[ATTACHMENT SETUP]** screen **[Figure 232]**.

Figure 232



Make sure the bucket is still vertical to the bucket pin (Item 2) and the cutting edge (or bucket teeth) (Item 1), and press the **[ENTER]** button (Item C) **[Figure 232]** to store the calibration information.

NOTE: If more than one attachment is being setup, the attachments can be changed on the arm and the additional attachment dimensions can also be entered. Always measure to the cutting / work tip on the attachment when measuring the dimensions to add to the inside and outside length screens for each new attachment. The Depth Check system uses these dimension along with the other setup points to calculate the tip position for Depth Check.

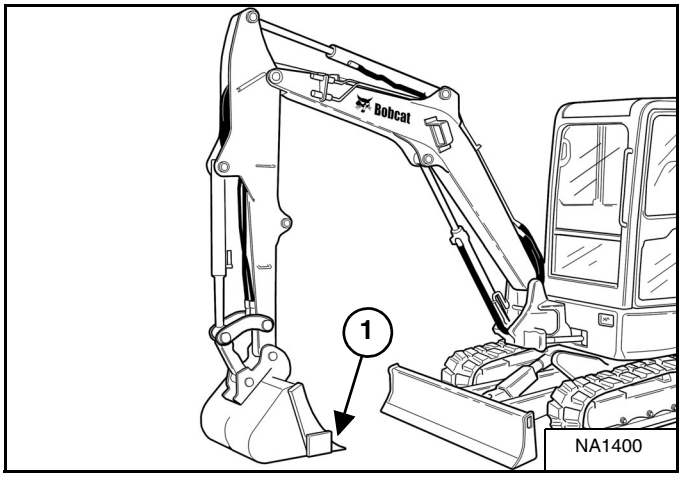
NOTE: When using an auger, it will not be as accurate as solid mounted attachments because all components are not rigidly mounted (auger bit has extra movement and rotation where the system is designed for fixed positions). When using the auger with the Depth Check system, enter zero for both attachment dimensions. When using the auger, try to keep the X-Change horizontal to the ground during the dig cycle and monitor the screen depth. Using this setup should give fairly accurate Depth Check information for auger applications.

This finishes the SETUP / CALIBRATION procedure except if also installing a laser. (See If Using A Laser With Depth Check on Page 130.)

Operation (Cont'd)

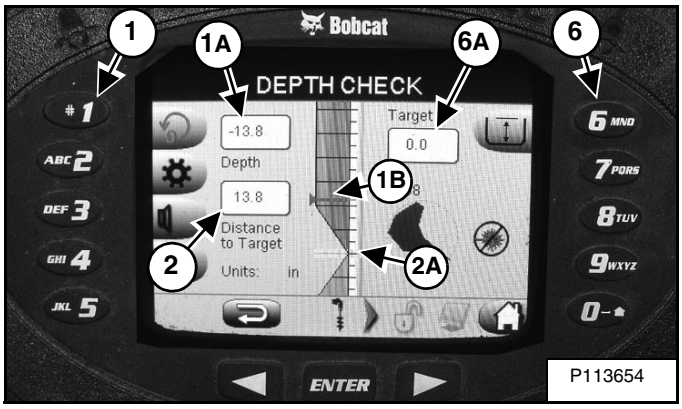
Digging A Hole To A Predetermined Depth (Re-benching Without A Laser Reference)

Figure 260



The first step is to set the position of the bucket (Item 1) **[Figure 260]** at the ground surface you are going to start the dig or on the surveyor mark to establish the starting ground position. Lower the bucket until it is on the ground or on the surveyor mark. This is called re-benching.

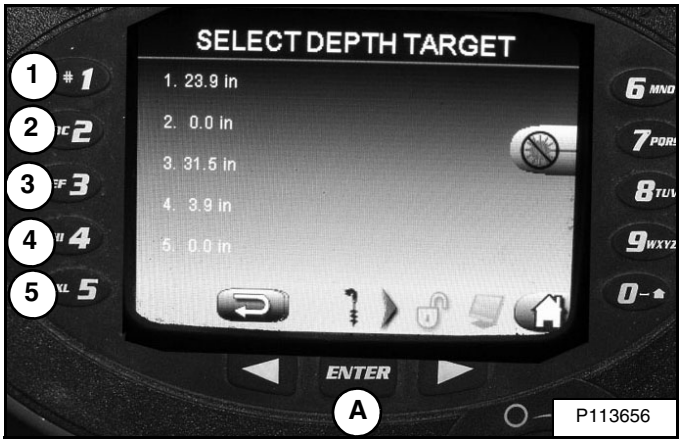
Figure 261



To set the cutting edge position (re-benching) to zero, access the Depth Check screen, and press the re-benching button (Item 1). After the button is pressed, the dimensions on the screen for depth (Item 1A) will be set to 0.0. (As the bucket is raised or lowered, the screen at (Item 1A) **[Figure 261]** will show the bucket position dimension moving.)

Press button (Item 6) **[Figure 261]** to change to the **[SELECT DEPTH TARGET]** screen **[Figure 262]**.

Figure 262



Select the target depth by pressing button (Items 1 through Item 5) **[Figure 262]** for selecting an existing depth. (To add a new target depth or to change an existing target depth, see information shown with steps **[Figure 239]** through **[Figure 244]**.)

The selected target depth will now appear on the screen at (Item 6A) **[Figure 261]**.

NOTE: If the excavator is at an angle (side slope) when re-benching, the system will only be accurate on the same plane (location) that it was re-benched at.

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 284

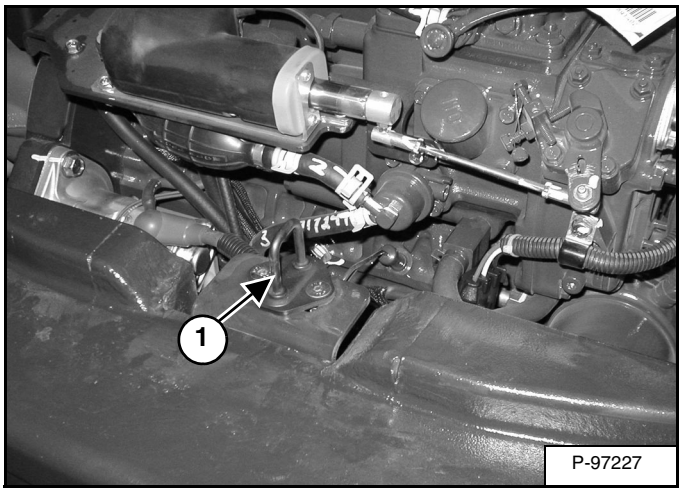
Pull the latch (Item 1) **[Figure 284]** and open the tailgate.

Push firmly to close the tailgate.

NOTE: The tailgate can be locked using the start key.

Adjusting The Latch

Figure 285



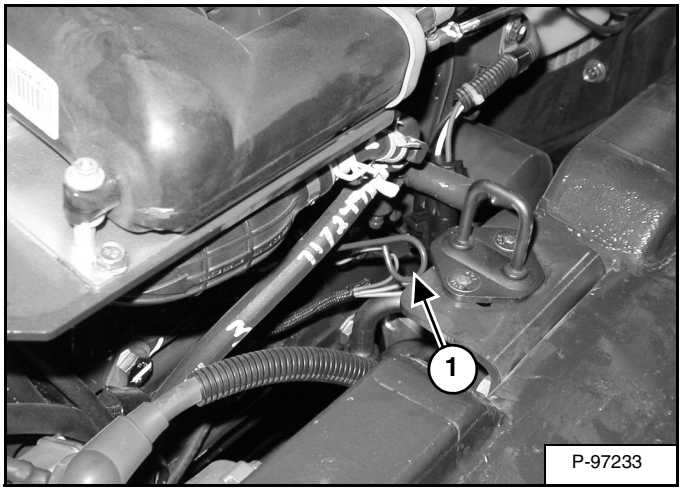
The tailgate latch (Item 1) **[Figure 285]** can be adjusted by loosening the two bolts, moving the latch, and tightening the two bolts.

Close the tailgate before operating the excavator.

Checking And Adding Engine Oil

Check the engine oil after every 8 - 10 hours of operation and before starting the engine. (See SERVICE SCHEDULE on Page 153.)

Figure 306



Open the tailgate. (See TAILGATE on Page 159.)

Remove the dipstick (Item 1) **[Figure 306]**.

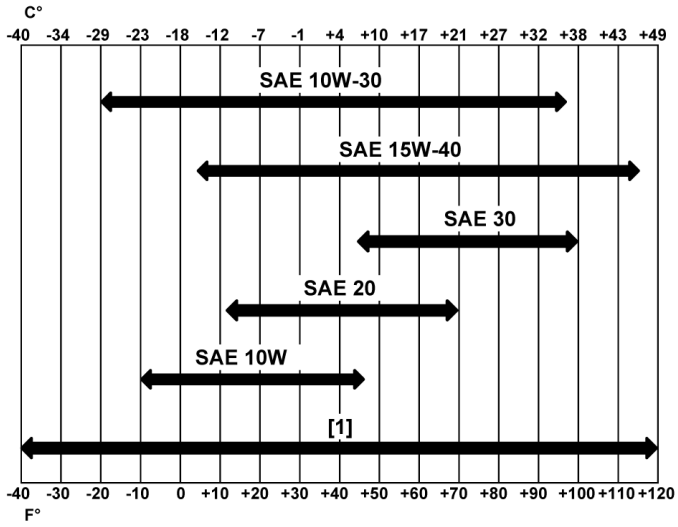
Keep the oil level between the marks on the dipstick.

Use a good quality motor oil that meets the correct API Service Classification.

Engine Oil Chart

Figure 307

ENGINE OIL
RECOMMENDED SAE VISCOSITY NUMBER
(LUBRICATION OILS FOR DIESEL ENGINE CRANKCASE)



TEMPERATURE RANGE ANTICIPATED BEFORE NEXT OIL CHANGE (DIESEL ENGINES MUST USE API CLASSIFICATION CI-4 OR BETTER)

[1] Synthetic Oil - Use recommendation from Synthetic Oil Manufacturer.

Use good quality engine oil that meets API Service Classification of CJ-4 or better **[Figure 307]**.

⚠ 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.

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HYDRAULIC SYSTEM

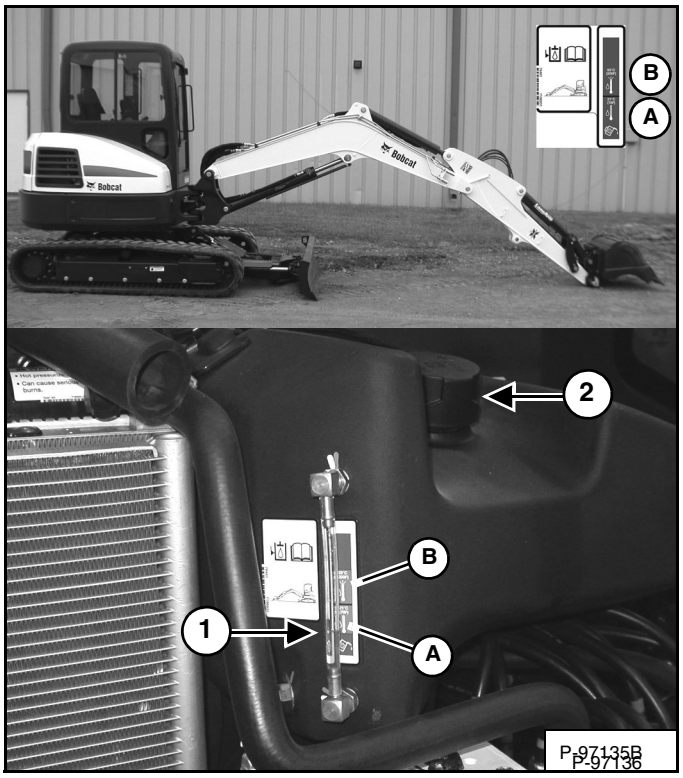
Checking And Adding Hydraulic Oil

Put the machine on a flat level surface.

Retract the arm and bucket cylinders, extend the boom cylinder, put the bucket on the ground and lower the blade. Stop the engine.

Open the right side cover. (See RIGHT SIDE COVER on Page 160.)

Figure 326



Park the machine in the position shown **[Figure 326]**. (The preferred method is to check the hydraulic oil when it is cold.)

Check the hydraulic oil level, it must be visible in the sight gauge (Item 1) **[Figure 326]**. The decal on the hydraulic tank shows the correct fill level.

A - Correct Oil Level COLD (Preferred)
B - Correct Oil Level HOT (Optional)

Clean the surface around the reservoir cap and remove the cap from the reservoir (Item 2) **[Figure 326]**.

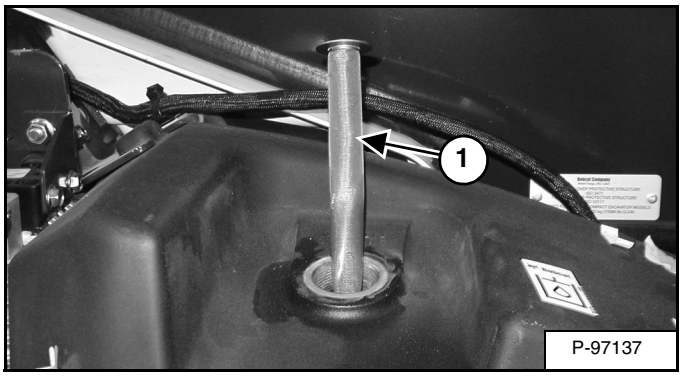
⚠ WARNING

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 327



Check the condition of the fill strainer screen (Item 1) **[Figure 327]**. Clean or replace as necessary.

Be sure the screen is installed before adding fluid.

Add the correct fluid (See **[Figure 328]**) to the reservoir until it is visible in the sight gauge. (See Capacities on Page 229.)

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

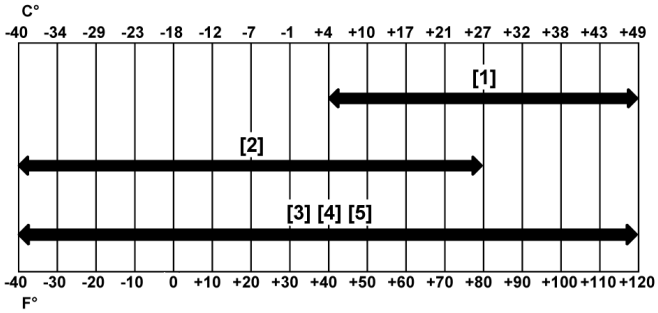
Install the cap.

Close the right side cover and tailgate.

Hydraulic / Hydrostatic Fluid Chart

Figure 328

HYDRAULIC / HYDROSTATIC FLUID RECOMMENDED ISO VISCOSITY GRADE (VG) AND VISCOSITY INDEX (VI)



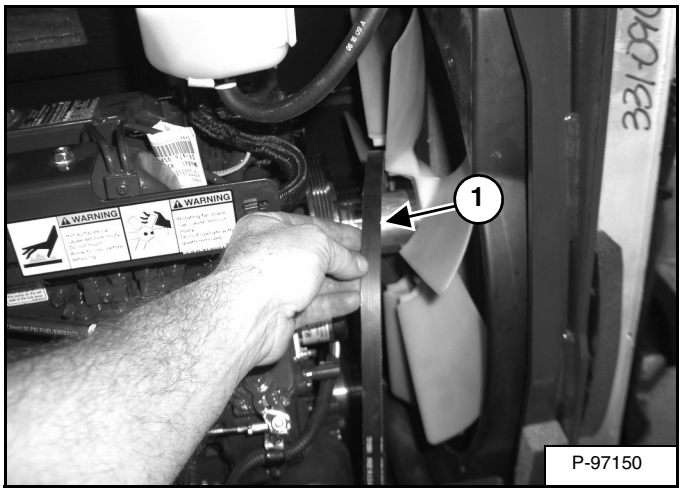
TEMPERATURE RANGE ANTICIPATED DURING MACHINE USE

[1] VG 100; Minimum VI 130
[2] VG 46; Minimum VI 150
[3] BOBCAT All-Season Fluid
[4] BOBCAT Synthetic Fluid
[5] BOBCAT Biodegradable Hydraulic / Hydrostatic Fluid (Unlike biodegradable fluids that are vegetable based, Bobcat biodegradable fluid is formulated to prevent oxidation and thermal breakdown at operating temperatures.)

Use only recommended fluid in the hydraulic system **[Figure 328]**.

Belt Replacement (Cont'd)

Figure 349

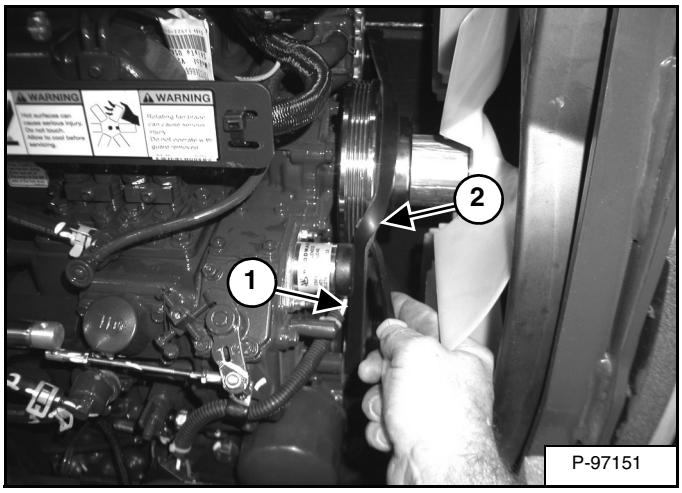


Remove the belt (Item 1) **[Figure 349]** by sliding it over the fan blades.

Installation

Position the belt (Item 1) **[Figure 349]** over the fan blades.

Figure 350



Install the belt (Item 1) **[Figure 350]** over the alternator pulley, the crankshaft pulley and over the fan spacer.

Use a pry bar (Item 2) **[Figure 350]** to position the belt onto the fan pulley.

Using a pry bar, rotate the flywheel by hand while using the second pry bar to install the belt over the fan pulley.

Continue to rotate the engine by hand until the belt is fully on the pulleys.

Reinstall the rubber plug (Item 1) **[Figure 347]**.

Install the fan guard (Item 2) with the three bolts (Item 1) **[Figure 346]**.

Close the tailgate.

SYSTEM SETUP AND ANALYSIS

Panel Setup (Deluxe Instrument Panel) (Cont'd)

Machine History - Log In Information

	Press a scroll button (Item 1) repeatedly until the Security screen icon (Inset) is highlighted.
	**MACHINE SETTINGS** is visible on screen. Select **[2. MACHINE HISTORY]**.
	Select **[1. LOG-IN INFORMATION]**.
	View User Log hours and last time / dated used. Individual information can be viewed and reset back to zero Select user **[KEYPAD 1 - 9]** to access individual user.

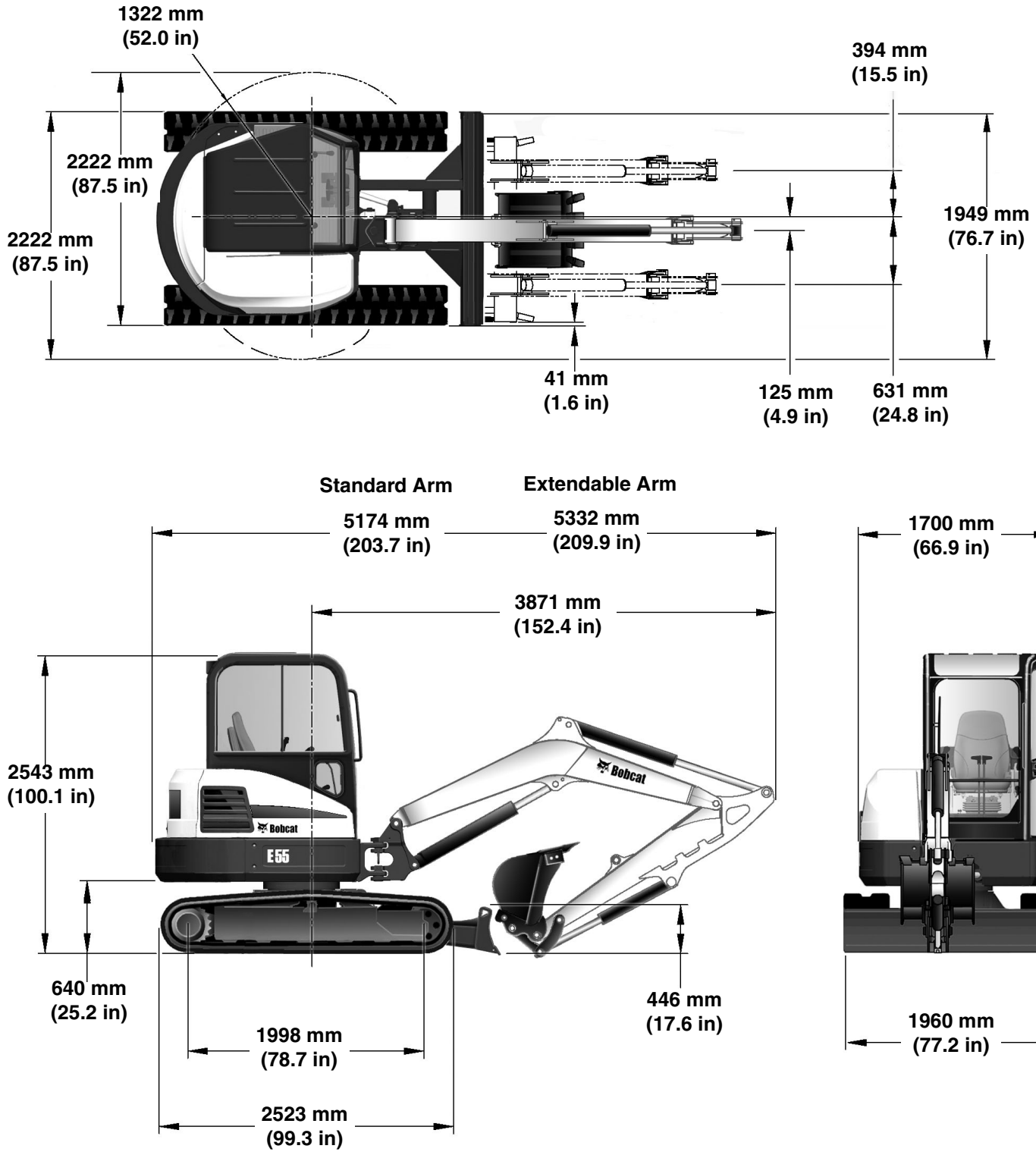
Machine History - User Job Statistics

	Press a scroll button (Item 1) repeatedly until the Security screen icon (Inset) is highlighted.
	**MACHINE SETTINGS** is visible on screen. Select **[2. MACHINE HISTORY]**.
	Select **[2. USER JOB STATISTICS]**.
	View Job Statistics (Job Hours / Idle Time Information can be viewed and reset back to zero

E55 EXCAVATOR SPECIFICATIONS

Excavator Machine Dimensions

- Where applicable, specification conform to SAE or ISO standards and are subject to change without notice.



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E55 EXCAVATOR SPECIFICATIONS (CONT'D)

Electrical

Starting Aid	Glow Plugs
Alternator	12 volt, 90 Amp open frame w / internal regulator
Battery	12 volt - 530 CCA @ -18°C (0°F)
Starter	12 volt; gear reduction 2.0 kW (2.7 hp)
Lights	37.5 watt (2)
Instrumentation	**Gauges:** Engine Coolant Temperature, Fuel Level. **Warning lights:** Fuel Level, Seat Belt, Engine Coolant Temperature, Engine Malfunction, Hydraulic System Malfunction, General Warning. **Indicators:** Two-Speed, Engine Preheat. **Data Display:** Operating Hours, Engine rpm, Maintenance Clock Countdown, Battery Voltage, Service Codes, Engine Preheat. **Other:** Audible Alarm, Lights. **Optional Deluxe Instrumentation Panel:** *Additional displays for: Engine rpm, Coolant Temperature and Oil Pressure; System Voltage and Hydraulic Oil Temperature. *Additional Features Included: Keyless Start, Digital Clock, Job Clock, Password Lockout, Multi-language Display, Help Screens, Diagnostic Capability and Engine / Hydraulic Systems Shutdown Function.

Capacities

Fuel Tank	79,9 L (21.1 U.S. gal)
Hydraulic Reservoir Only (Center of Sight Glass)	Tank Cap. 15,1 L (4.0 U.S. gal)
Hydraulic System (with Reservoir)	54,9 L (14.5 U.S. gal)
Cooling System	8,3 L (2.2 U.S. gal)
Engine Oil and Filter	7,1 L (7.5 qt)
Final Drive (each)	1,0 L (1.1 qt)
Air Conditioning Refrigerant (R-134a)	0,77 kg (1.7 lb)

Tracks

Type	Rubber	Steel
Width	400 mm (15.7 in)	400 mm (15.7 in)
Number Of Shoes	Single Assembly	39
Number of Track Rollers (per side)	5	5

Ground Pressure

Rubber Tracks	33,1 kPa (0,331 bar) (4.80 psi)
Steel Tracks	33,9 kPa (0,339 bar) (4.91 psi)