

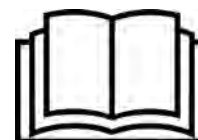
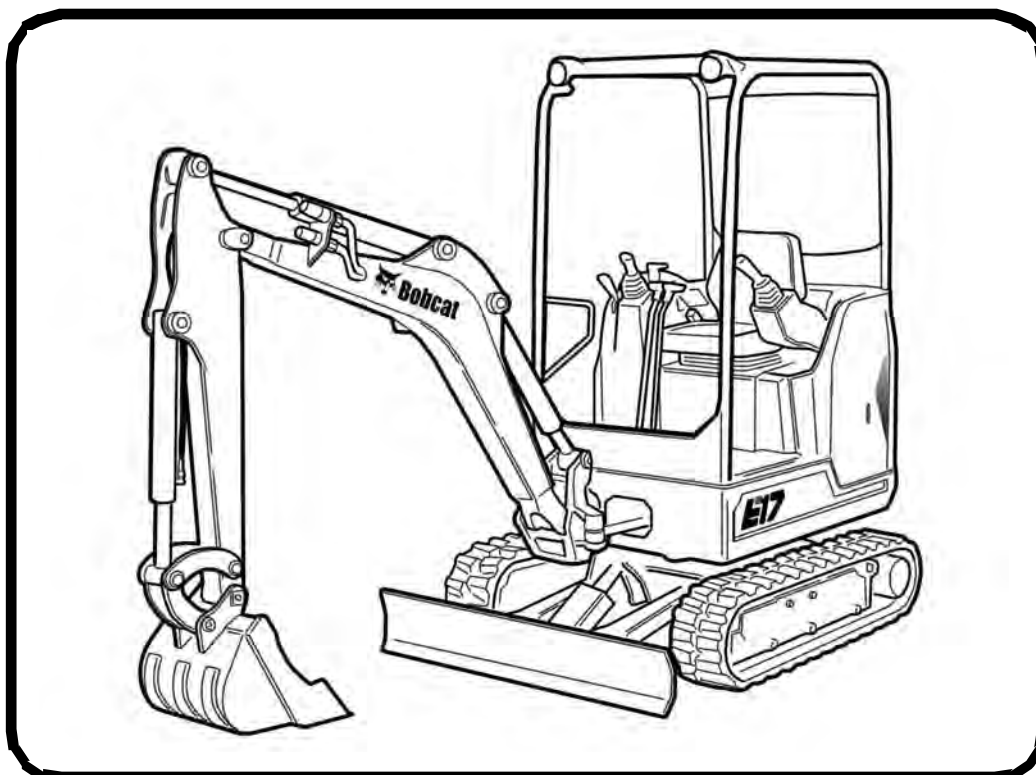


Bobcat®

EN

Operation & Maintenance Manual E17 Compact Excavator

S/N B27H11001 & Above



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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, 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

	<p>ENGINE OIL FILTER 6671057</p>		<p>BATTERY 6670251</p>
	<p>FUEL FILTER 6667352 FUEL FILTER - Pre-Filter 7247169</p>		<p>HYDRAULIC FILL / BREATHER CAP 6692836</p>
 	<p>AIR FILTER, Outer 6673752</p> <p>AIR FILTER, Inner 6673753</p>		<p>FLUID, Hydraulic / Hydrostatic</p> <p>6903117 - 9,5 L (2.5 U.S. gal) 6903118 - 18,9 L (5 U.S. gal) 6903119 - 208 L (55 U.S. gal)</p>
	<p>PRIMARY HYDRAULIC FILTER 6661248</p>		<p>ANTI-FREEZE, Propylene Glycol</p> <p>6983128 - Premixed 6983129 - Concentrate</p>
			<p>RADIATOR CAP 7257434</p>

NOTE: Always verify Part Numbers with your Bobcat dealer.

SAFETY INSTRUCTIONS (CONT'D)

Avoid Silica Dust



Cutting or drilling concrete containing sand or rock containing quartz may result in exposure to silica dust. Use a respirator, water spray or other means to control dust.

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 EMEA-0913

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INSTRUMENT AND CONSOLES (CONT'D)

Radio (Cont'd)

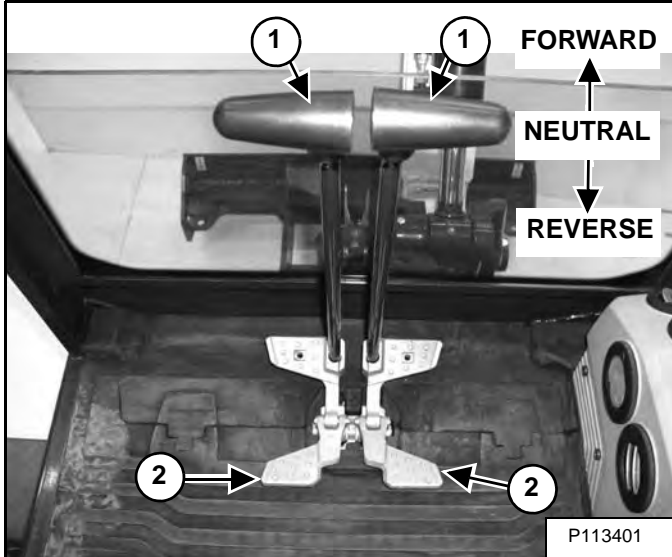
REF. NO.	DESCRIPTION	FUNCTION / OPERATION
1	POWER	Press to turn ON; press again to turn OFF.
2	MUTE	Press to mute audio output; [MUTE] will appear in display screen; press again to turn OFF.
3	DISPLAY	Press to toggle between function mode (showing tuner frequency, auxiliary input, weather band information, or timer) and clock mode. Press and hold to enter clock setting mode; use FREQUENCY DOWN (TUN -) button to adjust hours and FREQUENCY UP (TUN +) button to adjust minutes; normal operation will resume automatically.
4	BAND	Press to select tuner mode. Press to cycle through 2 AM (MW) bands and 3 FM bands.
5	AUXILIARY	Press to select Auxiliary Input mode. Portable audio device (MP3 player) must be attached to auxiliary input jack.
6	WEATHER BAND	Press to select weather band; use FREQUENCY UP (TUN +) and FREQUENCY DOWN (TUN -) buttons to adjust to the clearest station. The weather alert feature, if activated, will automatically switch from the current function to the weather band if a weather warning is received. See AUDIO / MENU ADJUSTMENT in this table.
7	TIMER	Press to access timer mode. Press to start the timer function; press again to stop timer; press again to resume timer or press and hold to reset timer and exit from timer mode.
8	DISPLAY SCREEN	Displays the time, frequency, and activated functions.
9	VOLUME UP	Adjusts volume up; current volume (0 - 40) will appear briefly in display screen.
10	AUDIO / MENU ADJUSTMENT	AUDIO ADJUSTMENT: Press to cycle through bass, treble, and balance settings; use VOLUME UP (VOL +) and VOLUME DOWN (VOL -) buttons to adjust when desired option is displayed; normal operation will resume automatically. MENU ADJUSTMENT: Press and hold for 3 seconds to enter menu adjustment settings; press to cycle through the following settings; use VOLUME UP (VOL +) and VOLUME DOWN (VOL -) buttons to adjust when desired option is displayed; normal operation will resume automatically. <ul style="list-style-type: none"> • Beep Confirm (On or Off) - Determines if beep will sound with each button press. • Operation Region (USA or Europe) - Selects the appropriate region. • Clock Display (12 or 24) - Selects a 12-hour or 24-hour clock display. • Display Brightness (Low, Medium, or High) - Determines brightness level of display screen. • Backlight Colour (Amber or Green) - Determines backlight colour of display screen. • Power On Volume (0 - 40) - Selects default volume setting when radio is turned on. • WB Alert (On or Off) - Determines if weather band alert feature is activated.
11	FREQUENCY DOWN	Press to manually tune the radio frequency down.
12	FREQUENCY UP	Press to manually tune the radio frequency up.
13	VOLUME DOWN	Adjusts volume down; current volume (0 - 40) will appear briefly in display screen.
14	SEEK FREQUENCY DOWN	Press to automatically tune frequency down to next strong station.
15	SEEK FREQUENCY UP	Press to automatically tune frequency up to next strong station.
16	PRESET STATIONS	Used to store and recall stations for each AM and FM band. Press and hold to store current station; press button to recall station.
17	AUXILIARY INPUT JACK	Connect line output of portable audio device (MP3 player) to 3,5 mm (1/8 in) jack and press AUXILIARY button.

TRAVEL CONTROLS

Forward And Reverse Travel

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

Figure 32



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 32] forward for forward travel; backward for reverse travel.

* Travel can also be controlled with foot pedals (Item 2) [Figure 32]. Pivot the heel of the pedals forward for additional space on the floor.

WARNING

AVOID INJURY OR DEATH

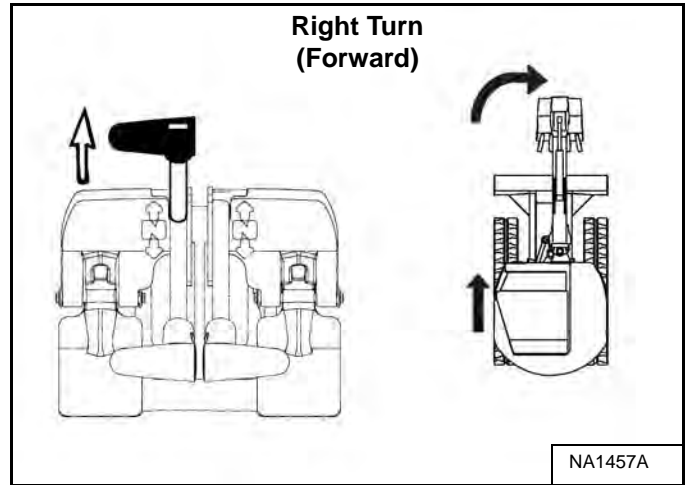
- Check the blade location before travelling. When the blade is to the rear, operate the steering levers / foot pedals in the opposite direction to when the blade is in the front.
- Move the steering levers / foot pedals slowly. Abrupt lever motion will cause the machine to jerk.

W-2235-EN-1009

Turning

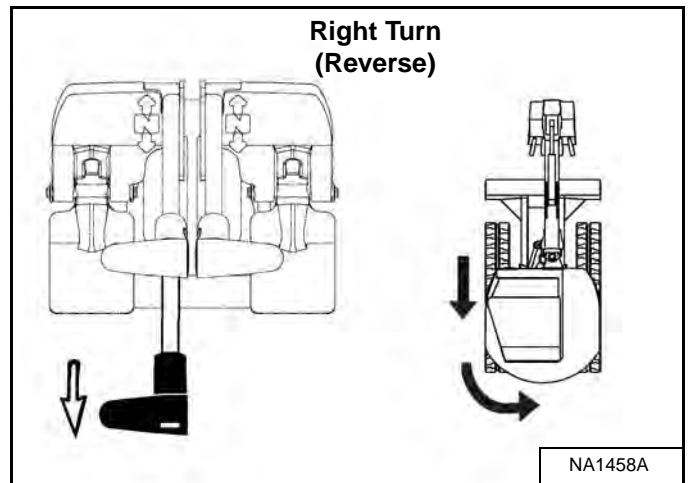
Right Turn

Figure 33



Push the left steering lever forward to turn right [Figure 33] while travelling forward.

Figure 34



Pull the left steering lever backward to turn right while travelling backward [Figure 34].

BOOM LOAD HOLDING VALVE

Description

The boom load holding valve (if equipped) will hold the boom in its current position in the event of hydraulic pressure loss.

WARNING

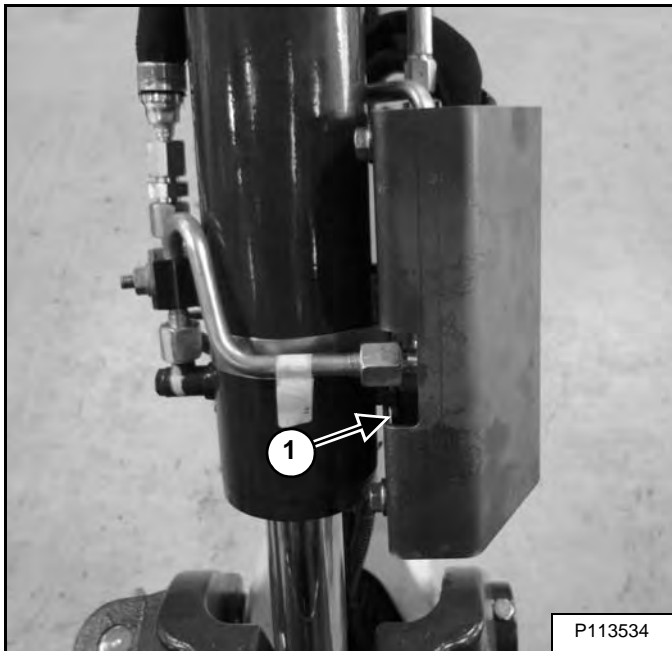
AVOID INJURY OR DEATH

Do Not work or stand under raised work equipment or attachment.

W-2793-0409

Lowering Boom With Load Holding Valve

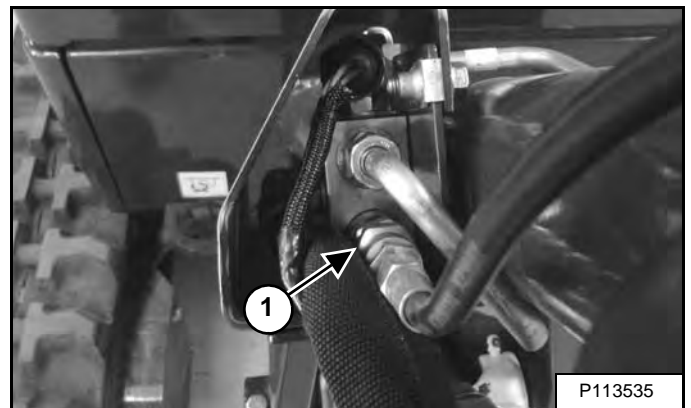
Figure 60



If the excavator is equipped with a boom load holding valve (Item 1) [Figure 60], it will be attached to the boom cylinder at the rod end.

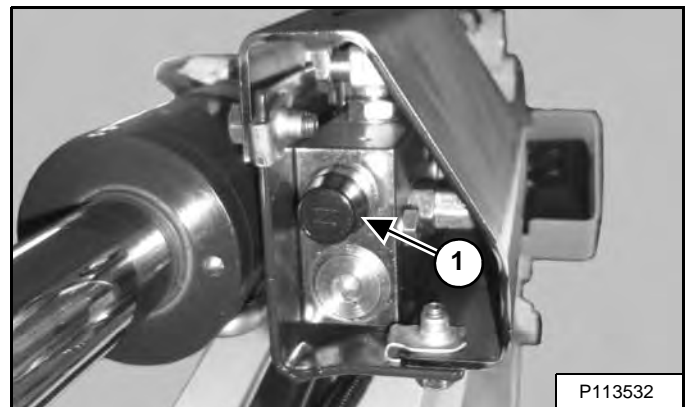
NOTE: DO NOT remove or adjust the two port relief valves (Item 2) [Figure 60]. If the port relief valves have been tampered with, see your Bobcat dealer for service.

Figure 61



NOTE: DO NOT remove or adjust the port relief valve (Item 1) [Figure 61] (that the drain hose is connected to). If the port relief valve have been tampered with, see your Bobcat dealer for service.

Figure 62



Remove the plastic protective cap (Item 1) [Figure 62] from the valve.

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

STARTING THE ENGINE (CONT'D)

Keyless

! WARNING

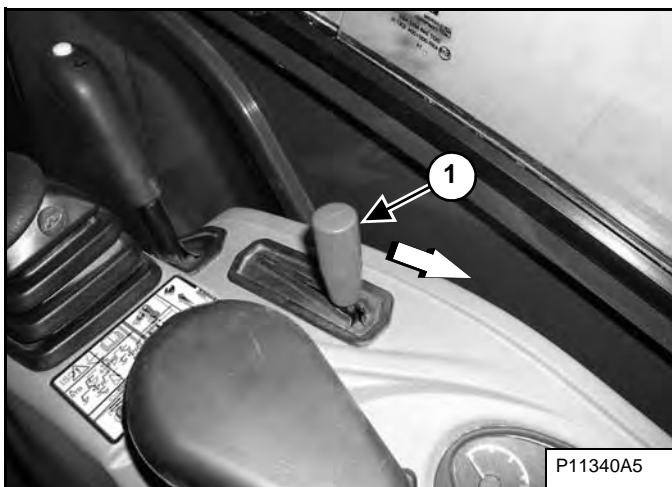
AVOID INJURY OR DEATH

- 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 65.)

Figure 82



Move the engine speed control lever (Item 1) [Figure 82] back to low idle.

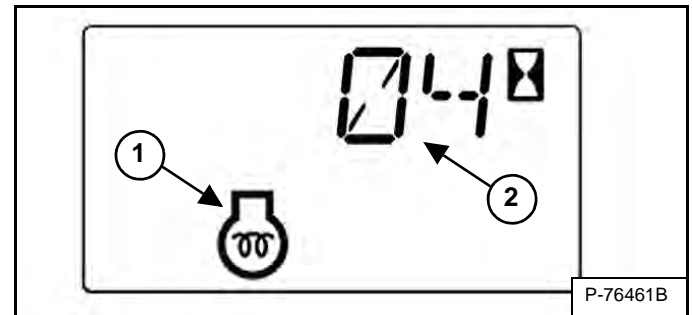
Figure 83



Turn the start switch (Item 1) [Figure 83] to ON. The indicator lights on the instrument panel will come ON briefly and the Instrument Panel / monitoring system will do a self test.

Use the keypad (Item 2) [Figure 83] to enter the password.

Figure 84



If preheating is required, the glow plugs will automatically cycle based on temperature. The engine preheat icon (Item 1) will be ON and the cycle time remaining (Item 2) [Figure 84] will be shown on the data display.

NOTE: It is recommended in cold weather to cycle the glow plugs twice before attempting to start the engine. This will allow for additional heating time for cold weather starting.

When the engine preheat icon goes OFF, turn the start switch (Item 1) [Figure 83] to START position and hold it until the engine starts. Release the switch and it will return to the ON position.

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

Turn the start switch (Item 1) [Figure 83] to the STOP position 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 Password Lockout Feature on Page 151.)

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ATTACHMENTS (CONT'D)

Installing And Removing The Attachment (German Style Coupler)

The type of quick coupler installed on the excavator may influence the excavator's rated lift capacity and the availability of attachments.

To determine the lift capacity changes, (See Lift Capacity on Page 85.).

For the rated lift capacity charts, (See Rated Lift Capacity - Canopy on Page 159.), (See Rated Lift Capacity - Cab on Page 160.)

See you Bobcat dealer for a list of approved attachments for the type of quick coupler installed on the machine.

NOTE: Coupler equipped with the lifting device can only be used on machines where the overload warning device and the boom and arm load holding valves are installed. See your Bobcat dealer for available kits.

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.).

Figure 104



Position the arm and quick coupler to the attachment [Figure 104].

NOTE: If equipped with a hydraulic clamp, fully retract the hydraulic clamp cylinder so the clamp is out of the way for installing the attachment.

WARNING

AVOID INJURY OR DEATH

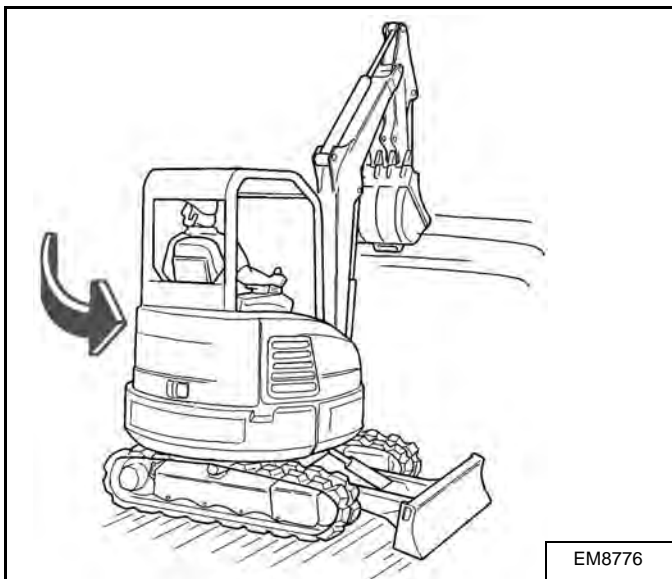
Never use attachments or buckets which are not approved by Bobcat Company. Buckets and attachments for safe loads of specified densities are approved for each model. Unapproved attachments can cause injury or death.

W-2052-0907

OPERATING PROCEDURE (CONT'D)

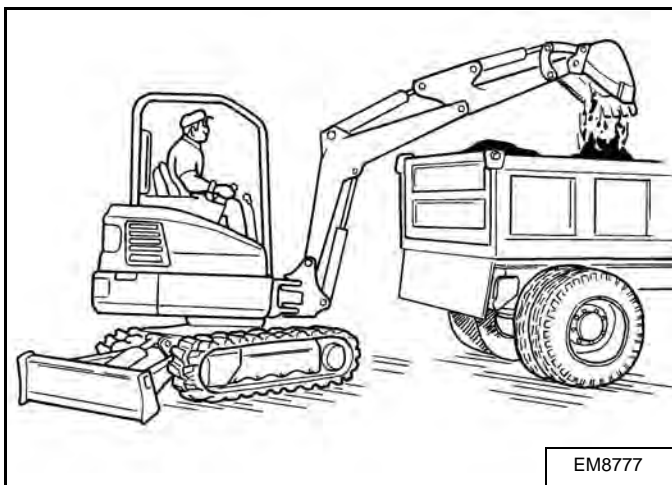
Excavating (Cont'd)

Figure 126



Look in the direction of rotation and make sure there are no bystanders in the work area before rotating the upperstructure [Figure 126].

Figure 127



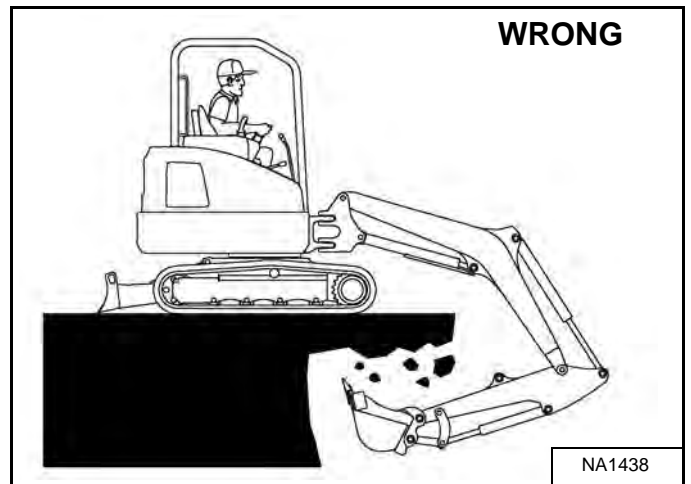
Extend the arm and uncurl the bucket to dump the material into a pile or truck [Figure 127].

IMPORTANT

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

I-2220-0503

Figure 128



Do not dig under the excavator [Figure 128].

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 quick coupler and attachments can occur.

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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.

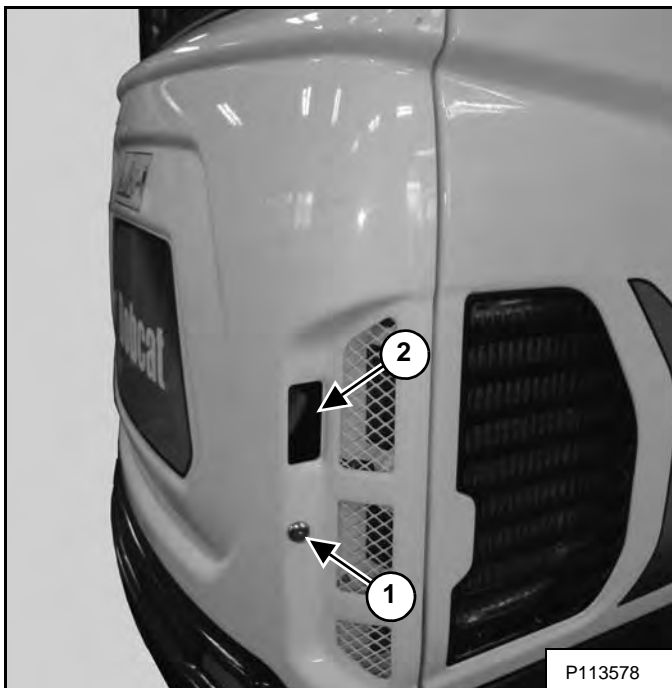
W-2012-0497

! WARNING

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

W-2020-1285

Figure 157

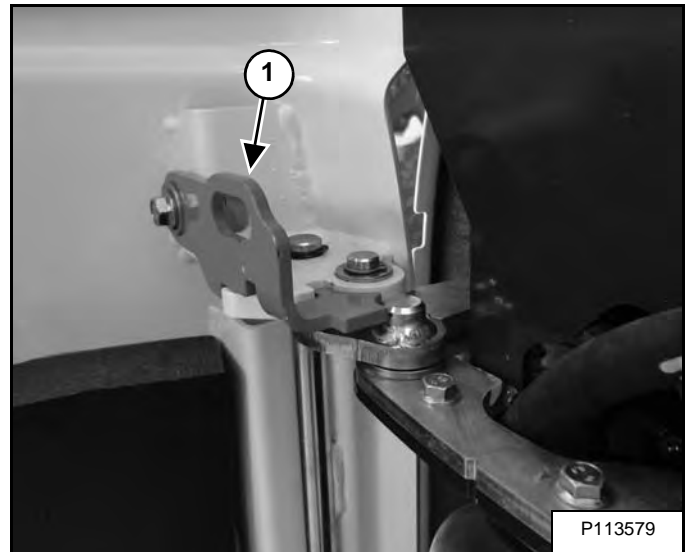


The tailgate can be locked (Item 1) [Figure 157] with the same key as the starter switch.

Pull on the latch (Item 2) [Figure 157] and open the tailgate.

Open the tailgate and rotate outward until it is held open by the latch (Item 1) [Figure 158].

Figure 158

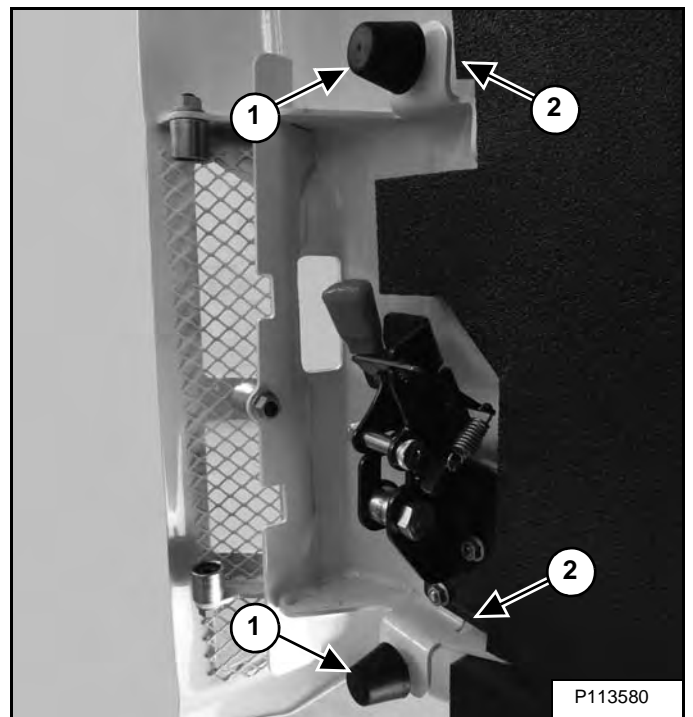


To close the tailgate, lift up on the latch (Item 1) [Figure 158] and slowly start to close the tailgate.

Push firmly to close the tailgate.

Adjusting The Latch

Figure 159



The tailgate can be adjusted at the two rubber bumpers (Item 1). Loosen the four nuts (Item 2) [Figure 159] and adjust the bumpers until the tailgate does not vibrate. Tighten the nuts securely after adjustment is completed.

Close the tailgate before operating the excavator.

ENGINE LUBRICATION SYSTEM (CONT'D)

Removing And Replacing Oil And Filter

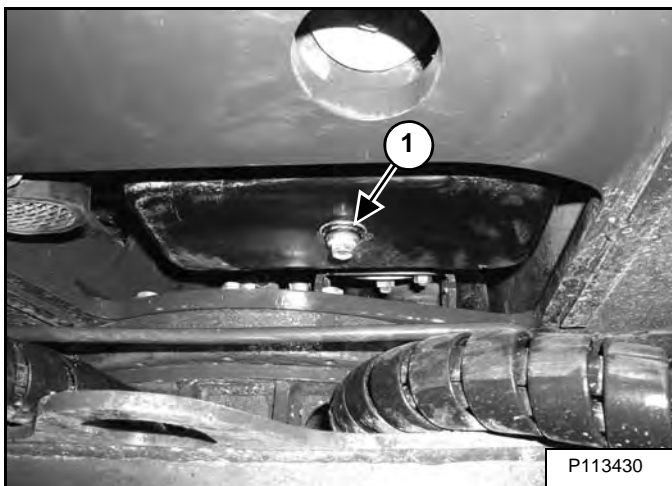
See the service schedule for the service interval for replacing the engine oil and filter. (See SERVICE SCHEDULE on Page 103.)

Rotate upperstructure so that the oil drain plug is between the rear tracks.

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

Open the tailgate. (See Opening And Closing on Page 109.)

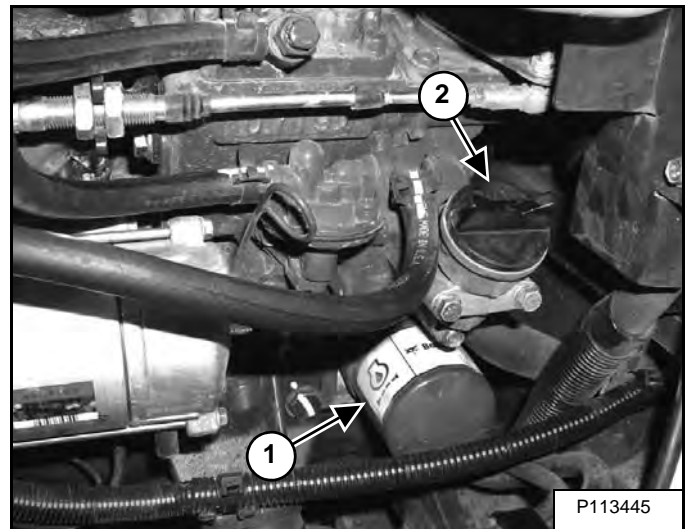
Figure 177



Place a container under the oil pan. Remove the drain plug (Item 1) [Figure 177] from the bottom of the engine oil pan.

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

Figure 178



Remove the oil filter (Item 1) [Figure 178] and clean the filter housing surface.

Use a genuine Bobcat replacement filter. Put clean oil on the filter gasket. Install the filter and hand tighten.

Install and tighten the drain plug (Item 1) [Figure 177].

Remove the fill cap (Item 1) [Figure 178].

Put oil in the engine. (See Checking And Adding Engine Oil on Page 118.)

Install the fill cap (Item 1) [Figure 178].

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.

HYDRAULIC SYSTEM

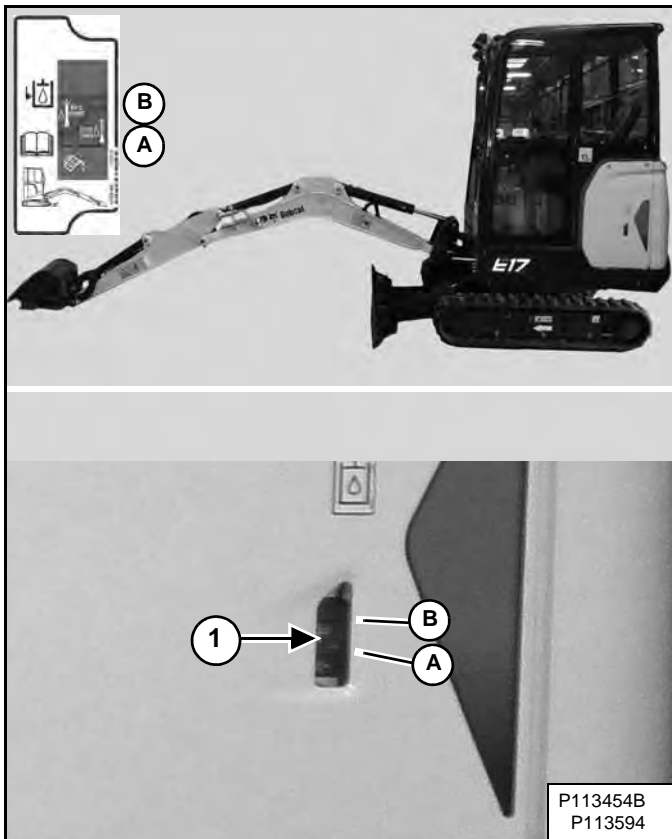
Checking And Adding Hydraulic Fluid

Put the machine on a flat level surface.

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

Open the right side cover. (See Opening And Closing on Page 110.)

Figure 195



Park the machine in the position shown **[Figure 195]**. (The preferred method is to check the hydraulic fluid when it is cold.)

Check the hydraulic fluid level, it must be visible in the sight gauge (Item 1) **[Figure 195]**. The decal on the hydraulic tank shows the correct fill level.

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

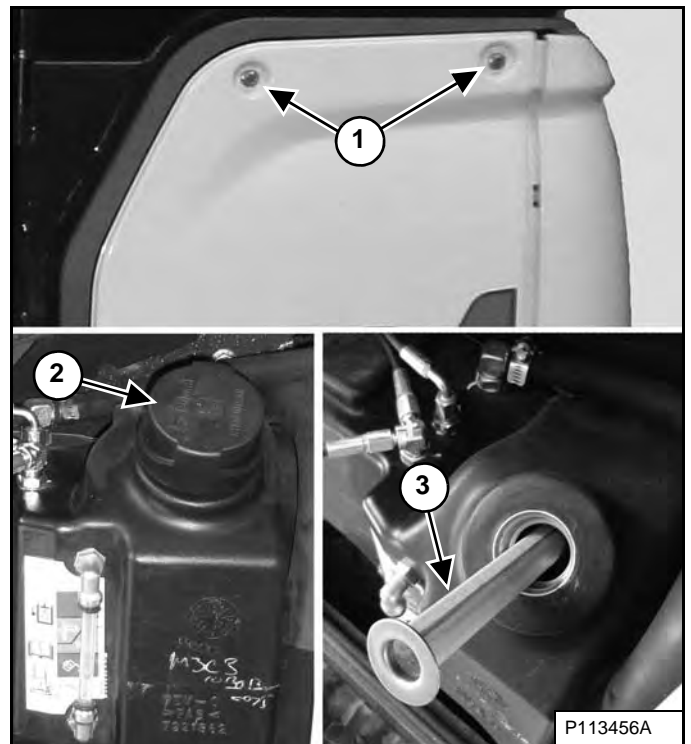


AVOID INJURY OR DEATH

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 196



Remove the two screw (Item 1) **[Figure 196]** from the top of the left side cover and remove the cover.

Clean the surface around the reservoir cap (Item 2) **[Figure 196]** and remove the cap.

Check the condition of the fill strainer screen (Item 3) **[Figure 196]**. 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.

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

Install the cap.

Close the right side cover and tailgate

LUBRICATION OF THE HYDRAULIC EXCAVATOR

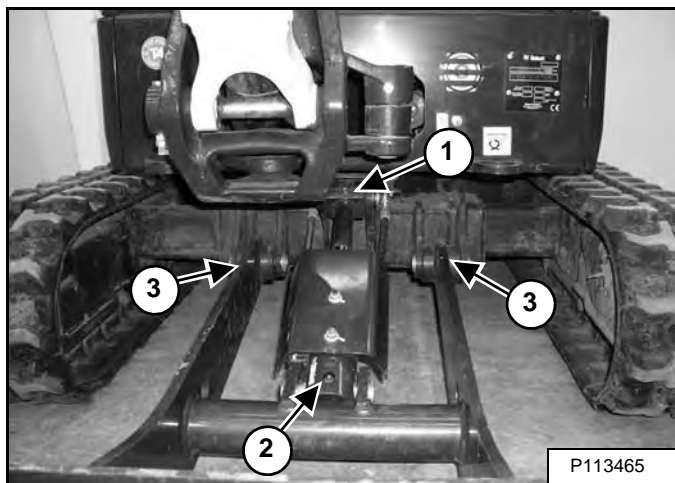
Lubrication Locations

Lubricate the excavator as specified in the service schedule for the best performance of the machine. (See SERVICE SCHEDULE on Page 103.)

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 excavator **EVERY 8 - 10 HOURS**:

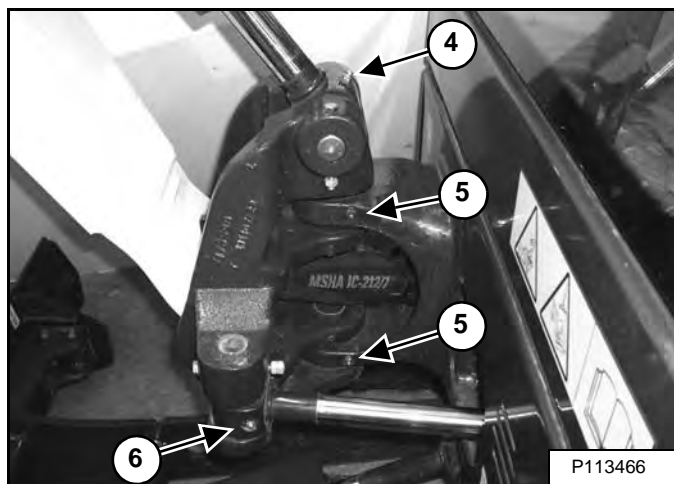
Figure 213



Ref Description (# of Fittings)

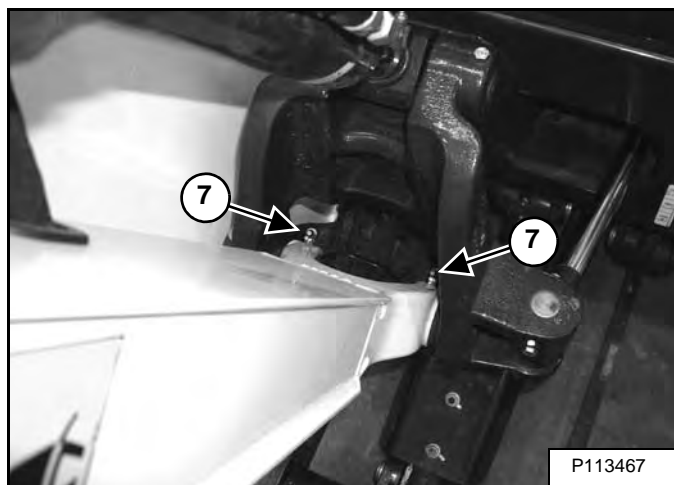
1. Blade Cylinder Rod End (1) [Figure 213]
2. Blade Cylinder Base End (1) [Figure 213]
3. Blade Pivots (2) [Figure 213]

Figure 214



4. Boom Cylinder Rob End (1) [Figure 214]
5. Boom Swing Pivot (3) [Figure 214]
6. Boom Swing Cylinder Rod End (1) [Figure 214]

Figure 215



7. Boom Pivot (2) [Figure 215]

DIAGNOSTICS SERVICE CODE (CONT'D)

Number Codes List (Cont'd)

CODE		CODE	
M2521	Load Sense Sensor Out of Range High	M5605	Auxiliary Rod Solenoid Short to Battery
M2522	Load Sense Sensor Out of Range Low	M5606	Auxiliary Rod Solenoid Short to Ground
		M5607	Auxiliary Rod Solenoid Open Circuit
M2602	Glow Plug Relay Error On	M5632	Auxiliary Rod Solenoid Overcurrent
M2603	Glow Plug Relay Error Off		
		M5721	Auxiliary Control Switch Out of Range High
M3128	Interrupted Power Failure	M5722	Auxiliary Control Switch Out of Range Low
		M5724	Auxiliary Control Switch Out of Neutral
M4109	Alternator Low		
M4110	Alternator High	M6204	Load Moment Sensor In Error
		M6221	Load Moment Sensor Out of Range High
M4304	Keyless Start Panel No Communication	M6222	Load Moment Sensor Out of Range Low
M4404	Secondary Controller No Communication	M6402	Switched Power Relay Error On
		M6403	Switched Power Relay Error Off
M4621	5V Sensor Supply Out of Range High	M6407	Switched Power Relay Open Circuit
M4622	5V Sensor Supply Out of Range Low		
		M7002	Switched Power Output Error On
M4721	8V Sensor Supply Out of Range High	M7003	Switched Power Output Error Off
M4722	8V Sensor Supply Out of Range Low	M7007	Switched Power Output Open Circuit
		M7028	Switched Power Output Failure
M5002	Light Output Error On		
M5003	Light Output Error Off	M7423	Main Controller Not Programmed
		M7497	Main Controller Software Updated
M5205	Offset Base Solenoid Short to Battery		
M5206	Offset Base Solenoid Short to Ground	M7604	Standard Display Panel No Communication
M5207	Offset Base Solenoid Open Circuit		
M5232	Offset Base Solenoid Overcurrent	M7748	Key Switch Multiple
M5305	Offset Rod Solenoid Error On	M7839	Hourmeter Changed
M5306	Offset Rod Solenoid Short to Ground		
M5307	Offset Rod Solenoid Open Circuit	R7404	No Communication To Main Controller
M5332	Offset Rod Solenoid Overcurrent		
M5421	Offset Control Switch Out of Range High		
M5422	Offset Control Switch Out of Range Low		
M5424	Offset Control Switch Out of Neutral		
M5505	Auxiliary Base Solenoid Short to Battery		
M5506	Auxiliary Base Solenoid Short to Ground		
M5507	Auxiliary Base Solenoid Open Circuit		
M5532	Auxiliary Base Solenoid Overcurrent		

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