

STARTING THE ENGINE (CONT'D)

Keyless Start Panel (Cont'd)

NOTE: Make sure both hand controls (ACS / AHC) or joysticks (SJC) are in the NEUTRAL position before starting the engine. Do not move the levers or joysticks from the NEUTRAL position when turning the key switch to RUN or START with the BICS™ activated.

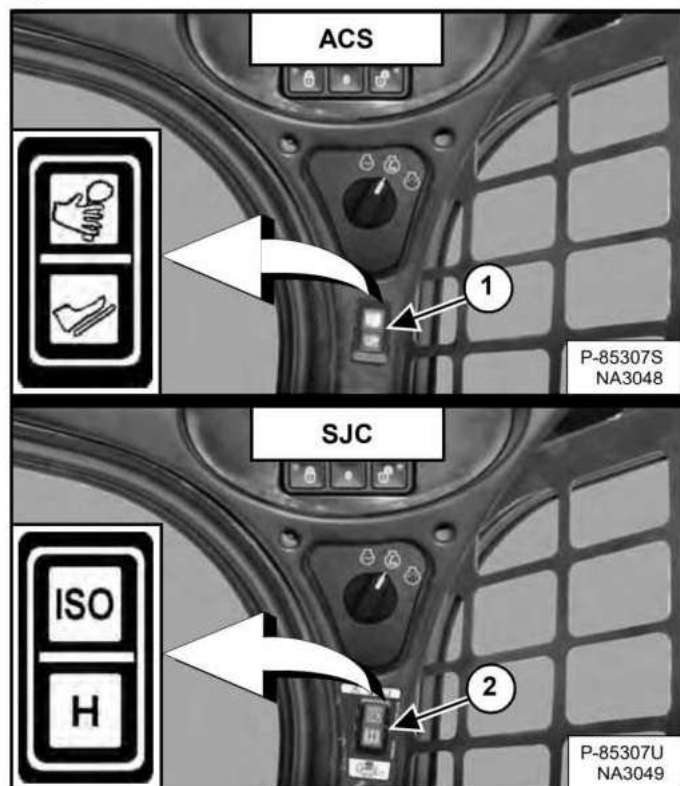
WARNING

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

Figure 123



(ACS) Select hand control or foot pedal operation (Item 1) [Figure 123] if equipped with ACS.

OR

(SJC) Select 'ISO' or 'H' Control Pattern (Item 2) [Figure 123] if equipped with SJC.

Figure 124



Press the PRESS TO OPERATE LOADER button (Item 1) [Figure 124] to activate the BICS™ and to perform hydraulic and loader functions.

(SJC) The current drive response setting is displayed briefly in the data display (Item 2) each time the PRESS TO OPERATE LOADER button (Item 1) [Figure 124] is pressed.

NOTE: (SJC) The light of the current switch position (ISO or H) will flash, which indicates PRESS TO OPERATE LOADER is required. The light will flash when the key switch is in the RUN position and continue to flash until the PRESS TO OPERATE LOADER button is pressed, then the light will become solid. If the mode (ISO / H) is changed while driving, the active mode light will remain solid and the pending mode light will flash. When operation of the machine is returned to NEUTRAL, the active mode light will turn off and the pending mode light will continue to flash until the PRESS TO OPERATE LOADER button is pressed.

WARNING

AVOID INJURY OR DEATH

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

W-2050-0807

Deluxe Instrumentation Panel



AVOID SERIOUS INJURY OR DEATH

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

W-2051-0212

Perform the PRE-STARTING PROCEDURE. (See PRE-STARTING PROCEDURE on Page 92.)

Figure 125



Set the engine speed control to the low idle position [Figure 125].

NOTE: Loaders with a Deluxe Instrumentation Panel have a permanent, randomly generated Master Password set at the factory. Your loader will also be assigned an Owner Password. Your dealer will provide you with this password. Change the owner password to one that you will easily remember to prevent unauthorised use of your loader. (See Changing The Owner Password on Page 198.) Keep your password in a safe location for future needs.

NOTE: The Password Lockout feature can be used to allow starting of the loader without a password. (See Password Lockout Feature on Page 199.)

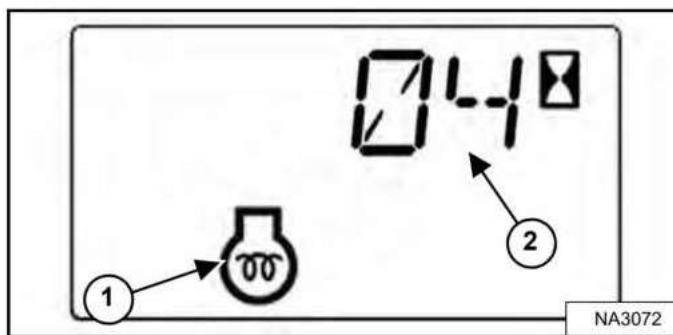
Figure 126



Turn the key switch to RUN (Item 2) [Figure 126]. The indicator lights on the left instrument panel will come ON briefly and the instrument panel / monitoring system will perform a self test.

Use the numeric keypad (Item 1) [Figure 126] to enter the password.

Figure 127



The machine will cycle the glow plugs automatically based on temperature. The engine preheat icon (Item 1) and the cycle time remaining (Item 2) [Figure 127] are displayed in the data display.

NOTE: The Deluxe Instrumentation Panel display screen will also display an engine preheat icon and [WAIT TO START].

When the engine preheat icon goes OFF, turn the key switch to START (Item 3). Release the switch when the engine starts and allow the switch to return to the RUN position (Item 2) [Figure 126].

Dealer Conv -- Not for Resale

STARTING THE ENGINE (CONT'D)

Deluxe Instrumentation Panel (Cont'd)

NOTE: Make sure both hand controls (ACS / AHC) or joysticks (SJC) are in the NEUTRAL position before starting the engine. Do not move the levers or joysticks from the NEUTRAL position when turning the key switch to RUN or START with the BICS™ activated.

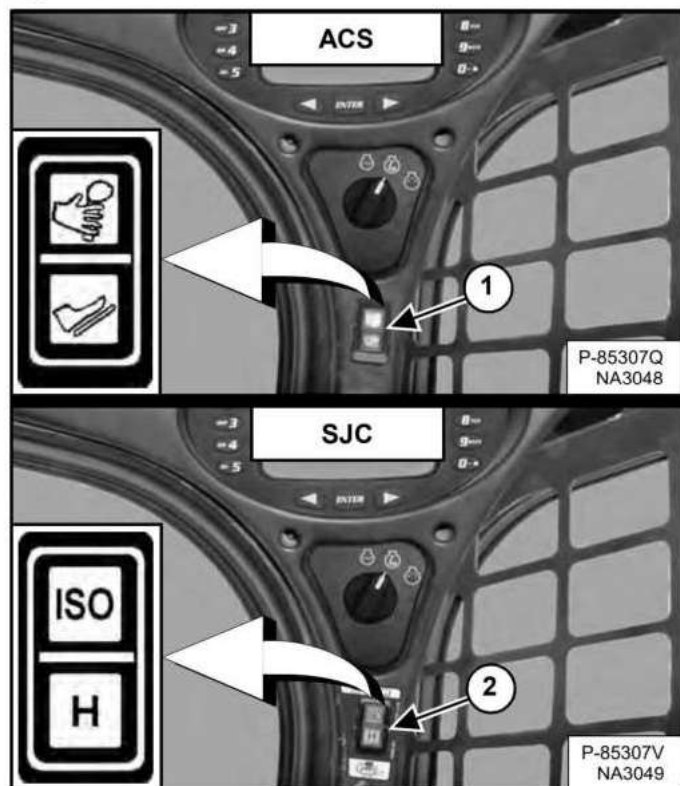
WARNING

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

Figure 128



(ACS) Select hand control or foot pedal operation (Item 1) [Figure 128] if equipped with ACS.

OR

(SJC) Select 'ISO' or 'H' Control Pattern (Item 2) [Figure 128] if equipped with SJC.

Figure 129



Press the PRESS TO OPERATE LOADER button (Item 1) [Figure 129] to activate the BICS™ and to perform hydraulic and loader functions.

(SJC) The current drive response setting is displayed briefly in the data display (Item 2) each time the PRESS TO OPERATE LOADER button (Item 1) [Figure 129] is pressed.

NOTE: (SJC) The light of the current switch position (ISO or H) will flash, which indicates PRESS TO OPERATE LOADER is required. The light will flash when the key switch is in the RUN position and continue to flash until the PRESS TO OPERATE LOADER button is pressed, then the light will become solid. If the mode (ISO / H) is changed while driving, the active mode light will remain solid and the pending mode light will flash. When operation of the machine is returned to NEUTRAL, the active mode light will turn off and the pending mode light will continue to flash until the PRESS TO OPERATE LOADER button is pressed.

WARNING

AVOID INJURY OR DEATH

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

W-2050-0807

STARTING THE ENGINE (CONT'D)

Warming The Hydraulic / Hydrostatic System

Let the engine operate for a minimum of 5 minutes to warm the engine and hydrostatic transmission fluid before operating the loader.

IMPORTANT

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

I-2007-0910

Cold Temperature Starting



WARNING

EXPLOSION CAN CAUSE SERIOUS INJURY, DEATH OR SEVERE ENGINE DAMAGE

DO NOT use ether or starting fluid with glow plug or air intake heater systems.

W-2071-0415

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

- Replace the engine oil with the correct type and viscosity for the anticipated starting temperature. (See Engine Oil Chart on Page 148.)
- Make sure the battery is fully charged.
- Install an engine heater, available from your Bobcat loader dealer.
- Move engine speed control halfway before starting. Return to idle position after the engine starts.

NOTE: The display screen of the Deluxe Instrumentation Panel may not be at full intensity when the temperature is below -26°C (-15°F). The display screen may take 30 seconds to several minutes to warm up. All systems remain monitored even when the display screen is off.

MONITORING THE DISPLAY PANELS

Left Panel

Figure 130



Frequently monitor the temperature and fuel gauges and BICS™ lights (all BICS™ lights must be OFF to operate loader) [Figure 130].

After the engine is running, frequently monitor the left instrument panel [Figure 130] for machine condition.

The associated icon is displayed if there is an error condition.

EXAMPLE: Engine Coolant Temperature is High.

The Engine Coolant Temperature icon (Item 1) [Figure 130] is ON.

Press the Information button (Item 2) [Figure 130] to cycle the data display until the service code screen is displayed. One of the following SERVICE CODES is displayed.

- [M0810] Engine Coolant Temperature Too High
- [M0811] Engine Coolant Temperature Extremely High

Find the cause of the service code and correct before operating the loader again. (See Service Codes List on Page 188.)

NOTE: The optional Deluxe Instrumentation Panel offers an additional view of service codes that includes a brief description. (See Viewing Service Codes on Page 187.)

Warning And Shutdown

When a WARNING condition exists; the associated icon light is ON and the alarm sounds 3 beeps. If this condition is allowed to continue, there may be damage to the engine or loader hydraulic systems.

When a SHUTDOWN condition exists; the associated icon light is ON and the alarm sounds continuously. The monitoring system will automatically stop the engine in 15 seconds. The engine can be restarted to move or relocate the loader.

The SHUTDOWN feature is associated with the following icons:

- General Warning
- Engine Malfunction
- Engine Coolant Temperature
- Hydraulic System Malfunction

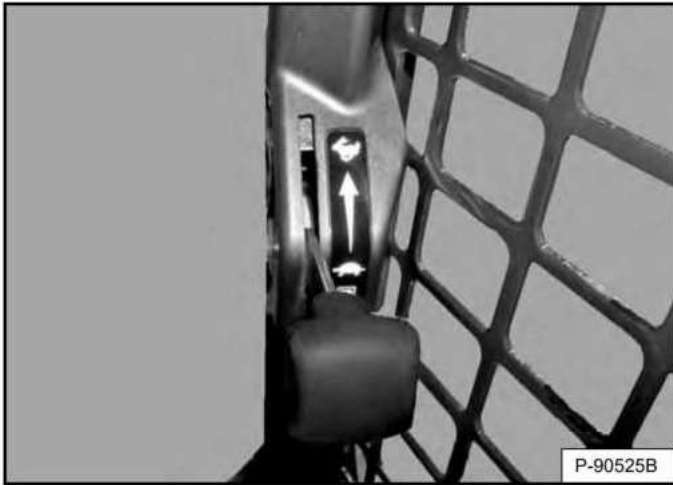
STOPPING THE ENGINE AND LEAVING THE LOADER

Procedure

Stop the loader on level ground.

Fully lower the lift arms and put the attachment flat on the ground.

Figure 131



Set the engine speed control to the low idle position [Figure 131].

Engage the parking brake.

Figure 132



Turn the key switch to the STOP position (Item 1) [Figure 132].

NOTE: If the loader lights are ON, they will remain ON for approximately 90 seconds after turning the loader OFF.

Raise the seat bar and make sure the lift and tilt functions are deactivated.

Unbuckle the seat belt.

(Standard Key Panel) Remove the key from the switch to prevent operation of the loader by unauthorised personnel.

NOTE: Activating the Password Lockout Feature on machines with the Keyless Start Panel or the Deluxe Instrumentation Panel allows operation of the loader without using a password. (See Password Lockout Feature on Page 197.) or (See Password Lockout Feature on Page 199.)

Figure 133



Exit the loader using grab handles, safety tread, and steps (maintaining a three-point contact) [Figure 133].

WARNING

AVOID INJURY OR DEATH

Before you leave the operator's seat:

- Lower the lift arms and put the attachment flat on the ground.
- Stop the engine.
- Engage the parking brake.
- Raise the seat bar.
- Move all controls to the NEUTRAL / LOCKED position to make sure the lift, tilt and traction drive functions are deactivated.

The seat bar system must deactivate these functions when the seat bar is up. See your Bobcat dealer for service if controls do not deactivate.

W-2463-1110

COUNTERWEIGHTS

Description

Counterweights can be installed on the loader. See your Bobcat dealer for information about approved loader counterweights and configurations for your job application and attachment.

Effect On The Loader And Loader Operation

Proper operation of the loader and attachment does not change if counterweights are installed on this loader. Always follow the instructions provided in this manual when operating your loader with counterweights installed.

Counterweights installed on your loader can affect the loader and its operation in some applications. Some examples are:

- Increased machine weight.
- Increased Rated Operating Capacity (ROC).
- Harder steering.
- Accelerated or uneven tyre wear.
- Increased power consumption.

When To Consider Using Counterweights

Install counterweights to increase the loaders Rated Operating Capacity (ROC) which could improve attachment performance in some applications. Some examples are:

- Using pallet fork with palletised loads.
- Using grapples or bale fork.
- Using buckets to handle loose material without digging.

When To Consider Removing Counterweights

Remove counterweights to increase the downward force of the attachment for better attachment performance in some applications. Some examples are:

- Digging with buckets.
- Using Hydraulic Breakers, Scrapers, or Landplanes.

Accessories That Affect Machine Weight

If your loader is already equipped with accessories like Over Tyre Steel Tracks, Water Tanks, or Rear Stabilisers; installing counterweights may not be necessary.

See your Bobcat dealer for more information about the proper use of counterweights with approved attachments and accessories for your loader.

ATTACHMENTS

Choosing The Correct Bucket

! 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

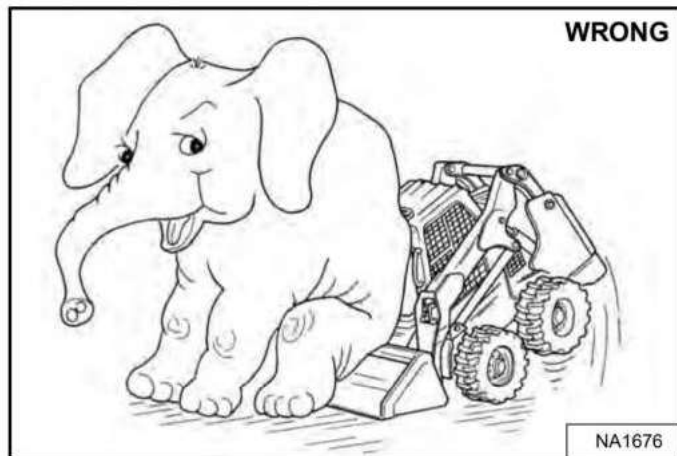
NOTE: Warranty is void if non-approved attachments are used on the Bobcat loader.

The dealer can identify, for each model loader, the attachments and buckets approved by Bobcat. The buckets and attachments are approved for Rated Operating Capacity (ROC) and for secure fastening to the Bob-Tach.

The ROC for this loader is shown on a decal in the operator cab. (See Performance on Page 203.)

The ROC is determined by using a bucket and material of normal density, such as dirt or dry gravel. If longer buckets are used, the load centre moves forward and reduces the ROC. If extremely dense material is loaded, the volume must be reduced to prevent overloading.

Figure 134



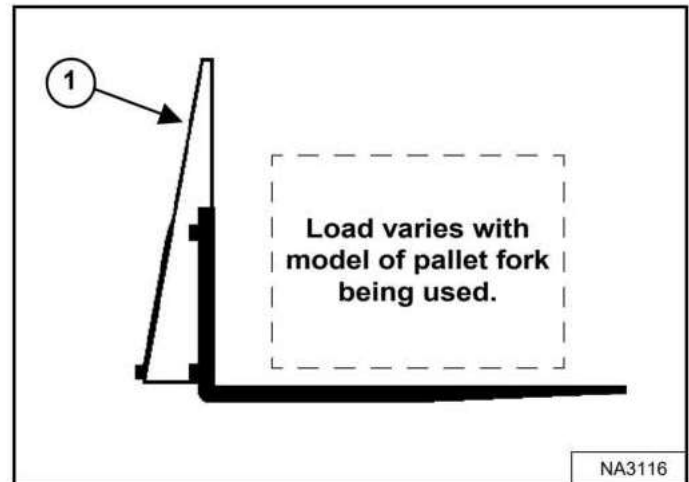
Exceeding the ROC [Figure 134] can cause the following problems:

- Steering the loader may be difficult.
- Tyres will wear faster.
- There will be a loss of stability.
- The life of the Bobcat loader will be reduced.

Use the correct bucket size for the type and density of material being handled. For safe handling of materials and avoiding machine damage, the attachment (or bucket) should handle a full load without going over the ROC for the loader. Partial loads make steering more difficult.

Pallet Fork

Figure 135



The maximum load to be carried when using a pallet fork is shown on a decal located on the pallet fork frame (Item 1) [Figure 135].

See your Bobcat dealer for more information about pallet fork inspection, maintenance, and replacement. See your Bobcat dealer for ROC when using a pallet fork and for other available attachments.

! WARNING

AVOID INJURY OR DEATH

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

W-2053-0903

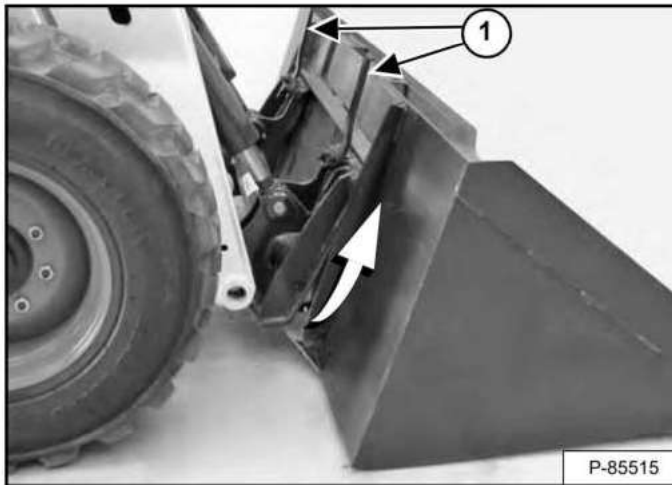
ATTACHMENTS (CONT'D)

Installing And Removing The Attachment (Hand Lever Bob-Tach)

The Bob-Tach is used for fast changing of buckets and attachments. See the appropriate attachment Operation & Maintenance Manual to install other attachments.

Installing

Figure 136



Pull the Bob-Tach levers up until they are fully raised (wedges fully raised) (Item 1) [Figure 136].

Enter the loader and perform the PRE-STARTING PROCEDURE. (See PRE-STARTING PROCEDURE on Page 92.)

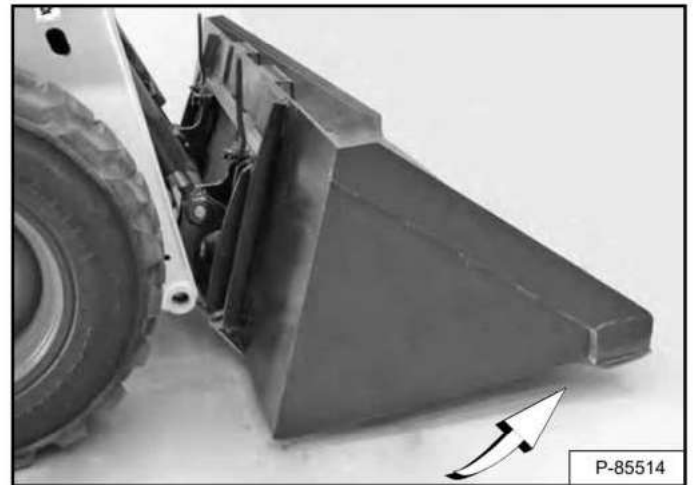
Start the engine, press the PRESS TO OPERATE LOADER button, and release the parking brake.

Lower the lift arms and tilt the Bob-Tach forward.

Drive the loader slowly forward until the top edge of the Bob-Tach is completely under the top flange of the bucket mounting frame [Figure 136] (or other attachment).

NOTE Be sure the Bob-Tach levers do not hit the attachment.

Figure 137



Tilt the Bob-Tach backward until the cutting edge of the bucket (or other attachment) is slightly off the ground [Figure 137]. This procedure will cause the bucket mounting frame to fit up against the front of the Bob-Tach.

Stop the engine and exit the loader. (See STOPPING THE ENGINE AND LEAVING THE LOADER on Page 104.)

WARNING

AVOID INJURY OR DEATH

Before you leave the operator's seat:

- Lower the lift arms and put the attachment flat on the ground.
- Stop the engine.
- Engage the parking brake.
- Raise the seat bar.
- Move all controls to the NEUTRAL / LOCKED position to make sure the lift, tilt and traction drive functions are deactivated.

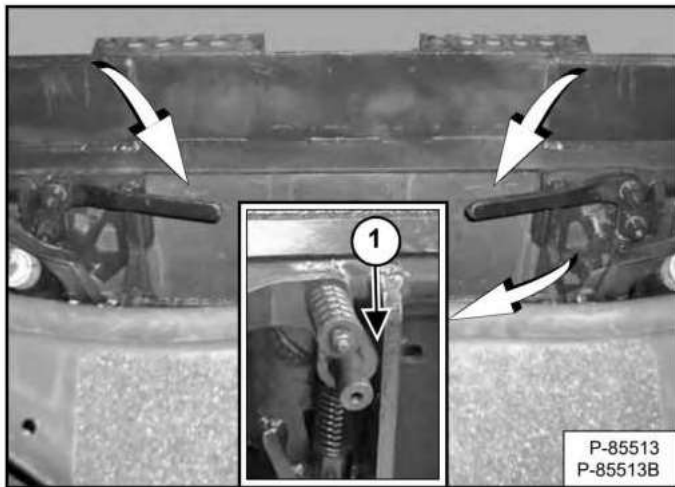
The seat bar system must deactivate these functions when the seat bar is up. See your Bobcat dealer for service if controls do not deactivate.

W-2463-1110

Installing And Removing The Attachment (Hand Lever Bob-Tach) (Cont'd)

Installing (Cont'd)

Figure 138

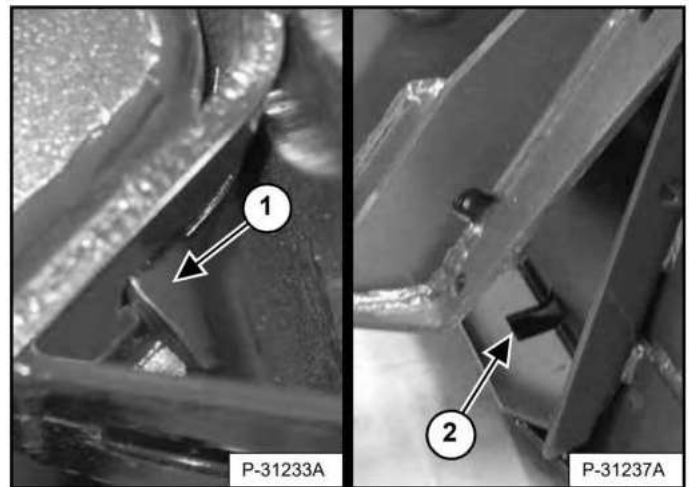


Push down on the Bob-Tach levers until they are fully engaged in the locked position [Figure 138] (wedges fully extended through the attachment mounting frame holes).

Both levers must contact the frame as shown when locked (Item 1) [Figure 138].

If both levers do not engage in the locked position, see your Bobcat dealer for maintenance.

Figure 139



The wedges (Item 1) must extend through the holes (Item 2) [Figure 139] in the mounting frame of the bucket (or other attachment), securely fastening the bucket to the Bob-Tach.

! WARNING

AVOID INJURY OR DEATH

The Bob-Tach wedges must extend through the holes in the attachment mounting frame. Levers must be fully down and locked. Failure to secure wedges can allow attachment to come off.

W-2715-0208

Installing And Removing The Attachment (Hand Lever Bob-Tach) (Cont'd)

Removing

Lower the lift arms and put the attachment flat on the ground. Lower or close any hydraulic equipment, if applicable.

Stop the engine and exit the loader. (See STOPPING THE ENGINE AND LEAVING THE LOADER on Page 104.)



AVOID INJURY OR DEATH

Before you leave the operator's seat:

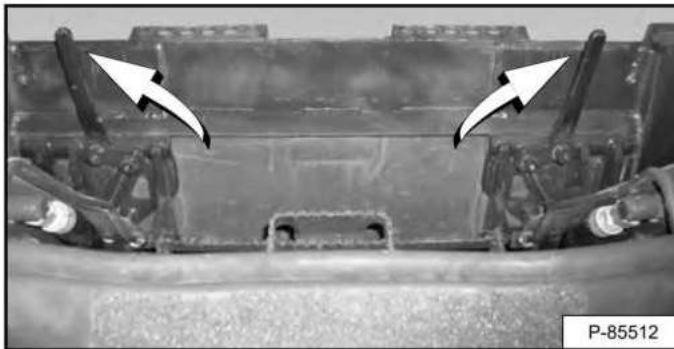
- Lower the lift arms and put the attachment flat on the ground.
- Stop the engine.
- Engage the parking brake.
- Raise the seat bar.
- Move all controls to the **NEUTRAL / LOCKED** position to make sure the lift, tilt and traction drive functions are deactivated.

The seat bar system must deactivate these functions when the seat bar is up. See your Bobcat dealer for service if controls do not deactivate.

W-2463-1110

Disconnect attachment electrical harness and water or hydraulic lines, if applicable, from the loader. (See Relieve Auxiliary Hydraulic Pressure (Loader And Attachment) on Page 88.)

Figure 140



Pull the Bob-Tach levers up [Figure 140] until they are fully raised (wedges fully raised).



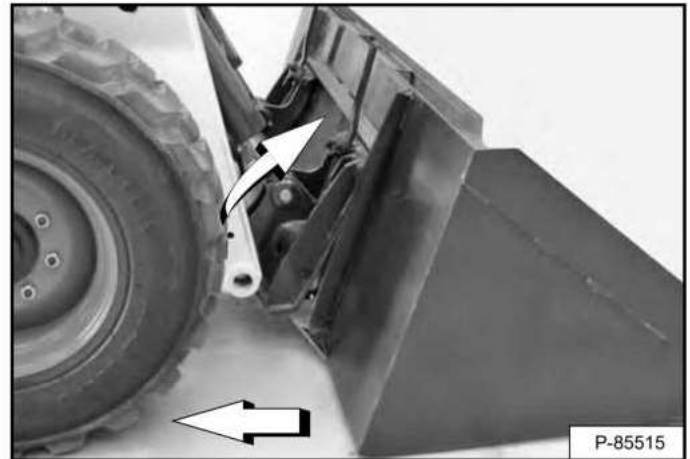
Bob-Tach levers have spring tension. Hold lever tightly and release slowly. Failure to obey warning can cause injury.

W-2054-1285

Enter the loader and perform the PRE-STARTING PROCEDURE. (See PRE-STARTING PROCEDURE on Page 92.)

Start the engine, press the PRESS TO OPERATE LOADER button, and release the parking brake.

Figure 141



Tilt the Bob-Tach forward and drive the loader backward, away from the bucket or attachment [Figure 141].

Dealer Conv -- Not for Resale

ATTACHMENTS (CONT'D)

Installing And Removing The Attachment (Power Bob-Tach)

This machine may be equipped with a Power Bob-Tach.

The Power Bob-Tach is used for fast changing of buckets and attachments. See the appropriate attachment Operation & Maintenance Manual to install other attachments.

Installing

Enter the loader and perform the PRE-STARTING PROCEDURE. (See PRE-STARTING PROCEDURE on Page 92.)

Start the engine, press the PRESS TO OPERATE LOADER button, and release the parking brake.

Lower the lift arms and tilt the Bob-Tach forward.

Figure 142

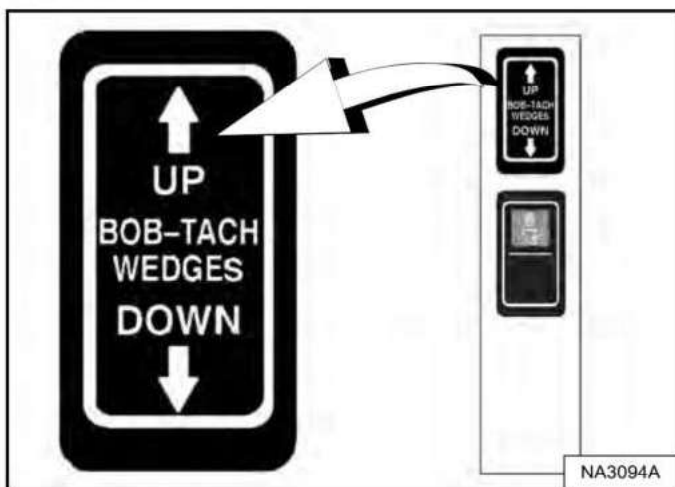
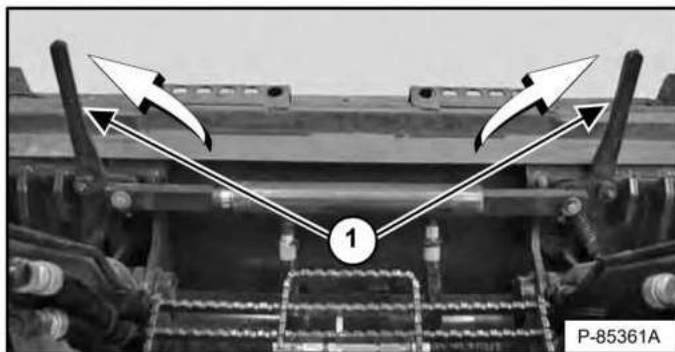


Figure 143



Push and hold BOB-TACH WEDGES "UP" switch (Right Switch Panel) [Figure 142] until levers (Item 1) [Figure 143] are fully raised (wedges fully raised).

Figure 144



Drive the loader slowly forward until the top edge of the Bob-Tach is completely under the top flange of the bucket mounting frame [Figure 144] (or other attachment).

NOTE: Be sure the Bob-Tach levers do not hit the attachment.

Figure 145

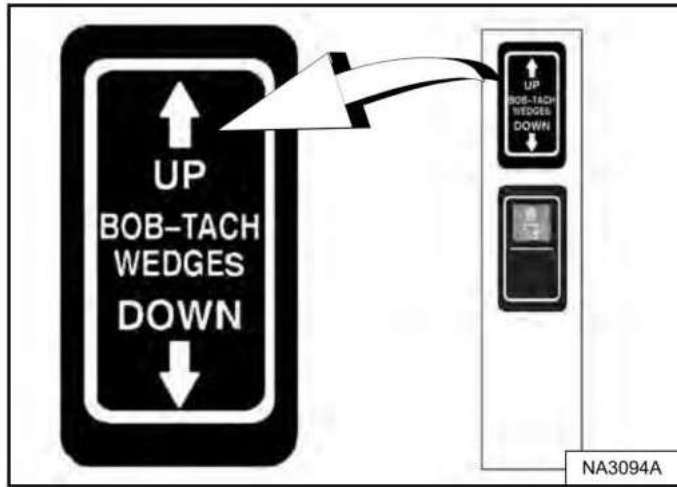


Tilt the Bob-Tach backward until the cutting edge of the bucket (or other attachment) is slightly off the ground [Figure 145]. This procedure will cause the bucket mounting frame to fit up against the front of the Bob-Tach.

Installing And Removing The Attachment (Power Bob-Tach) (Cont'd)

Installing (Cont'd)

Figure 146



Push and hold BOB-TACH WEDGES "UP" switch (Right Switch Panel) [Figure 146] to make sure the levers are fully raised (wedges fully raised).

NOTE: The Power Bob-Tach system uses continuously pressurised hydraulic fluid to keep the wedges in the engaged position and prevent attachment disengagement. Because the wedges can slowly lower, the operator may need to reactivate the switch (BOB-TACH WEDGES "UP") to be sure both wedges are fully raised before installing the attachment.

Figure 147

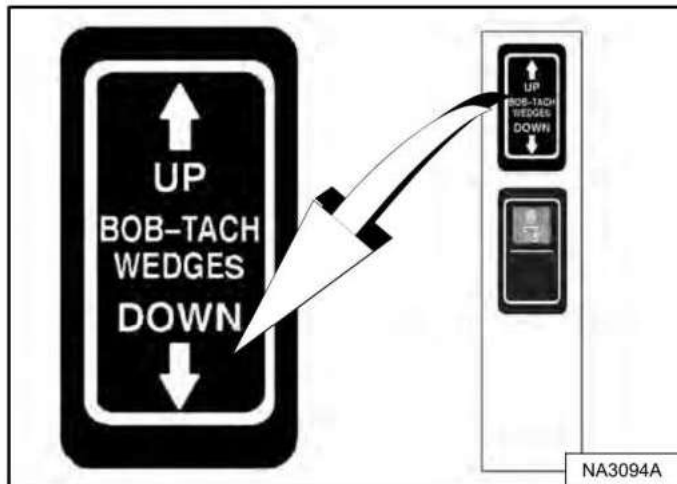
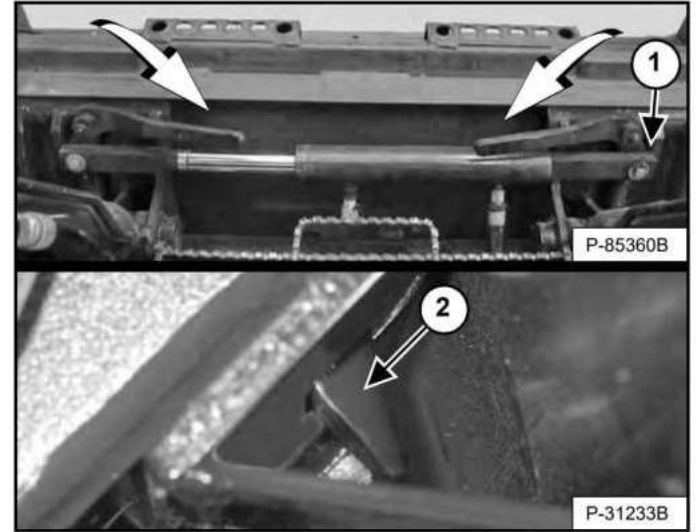


Figure 148



Push and hold BOB-TACH WEDGES "DOWN" switch (Right Switch Panel) [Figure 147] until levers are fully engaged in the locked position [Figure 148] (wedges fully extended through the attachment mounting frame holes).

Both levers must contact the frame as shown when locked (Item 1) [Figure 148].

If both levers do not engage in the locked position, see your Bobcat dealer for maintenance.

The wedges (Item 2) [Figure 148] must extend through the holes in the mounting frame of the bucket (or other attachment), securely fastening the bucket to the Bob-Tach.



AVOID INJURY OR DEATH

The Bob-Tach wedges must extend through the holes in the attachment mounting frame. Levers must be fully down and locked. Failure to secure wedges can allow attachment to come off.

W-2715-0208

Dealer Conv -- Not for Resale

Installing And Removing The Attachment (Power Bob-Tach) (Cont'd)

Removing

Lower the lift arms and put the attachment flat on the ground. Lower or close any hydraulic equipment, if applicable.

If the attachment has electrical, water, or hydraulic connections to the loader:

1. Stop the engine and exit the loader. (See STOPPING THE ENGINE AND LEAVING THE LOADER on Page 104.)



AVOID INJURY OR DEATH

Before you leave the operator's seat:

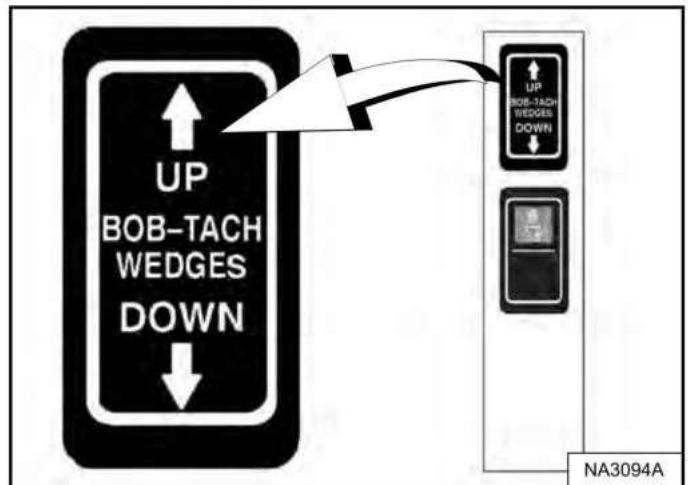
- Lower the lift arms and put the attachment flat on the ground.
- Stop the engine.
- Engage the parking brake.
- Raise the seat bar.
- Move all controls to the NEUTRAL / LOCKED position to make sure the lift, tilt and traction drive functions are deactivated.

The seat bar system must deactivate these functions when the seat bar is up. See your Bobcat dealer for service if controls do not deactivate.

W-2463-1110

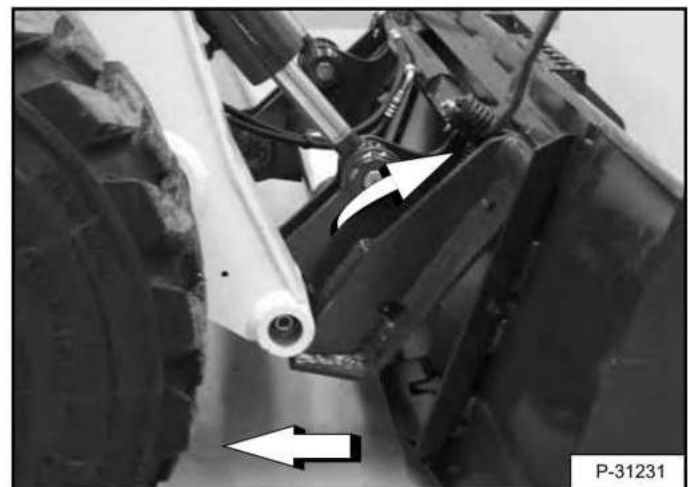
2. Disconnect attachment electrical harness and water or hydraulic lines, if applicable, from the loader. (See Relieve Auxiliary Hydraulic Pressure (Loader And Attachment) on Page 88.)
3. Enter the loader and perform the PRE-STARTING PROCEDURE. (See PRE-STARTING PROCEDURE on Page 92.)
4. Start the engine, press the PRESS TO OPERATE LOADER button, and release the parking brake.

Figure 149



Push and hold BOB-TACH WEDGES "UP" switch (Right Switch Panel) [Figure 149] until levers are fully raised (wedges fully raised).

Figure 150



Tilt the Bob-Tach forward and drive the loader backward, away from the bucket or attachment [Figure 150].

NOTE: The Power Bob-Tach system uses continuously pressurised hydraulic fluid to keep the wedges in the engaged position and prevent attachment disengagement. Because the wedges can slowly lower, the operator may need to reactivate the switch (BOB-TACH WEDGES "UP") when removing an attachment to be sure both wedges are fully raised.

OPERATING PROCEDURE

Inspect The Work Area

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

Look for sharp drop-offs or rough terrain. Have underground utility lines (gas, electrical, water, sewer, irrigation, etc.) located and marked.

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

Always check ground conditions before starting your work:

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

Basic Operating Instructions

Always warm the engine and hydrostatic system before operating the loader.

IMPORTANT

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

I-2015-0284

Operate the loader with engine at full speed for maximum horsepower. Move the steering controls only a small amount to operate the loader slowly.

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

Operating Near An Edge Or Water

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

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



WARNING

MACHINE TIPPING OR ROLLOVER CAN CAUSE SERIOUS INJURY OR DEATH

- Keep the lift arms as low as possible.
- Do not travel or turn with the lift arms up.
- Turn on level ground. Slow down when turning.
- Go up and down slopes, not across them.
- Keep the heavy end of the machine uphill.
- Do not overload the machine.
- Check for adequate traction.

W-2018-1112

Driving On Public Roads

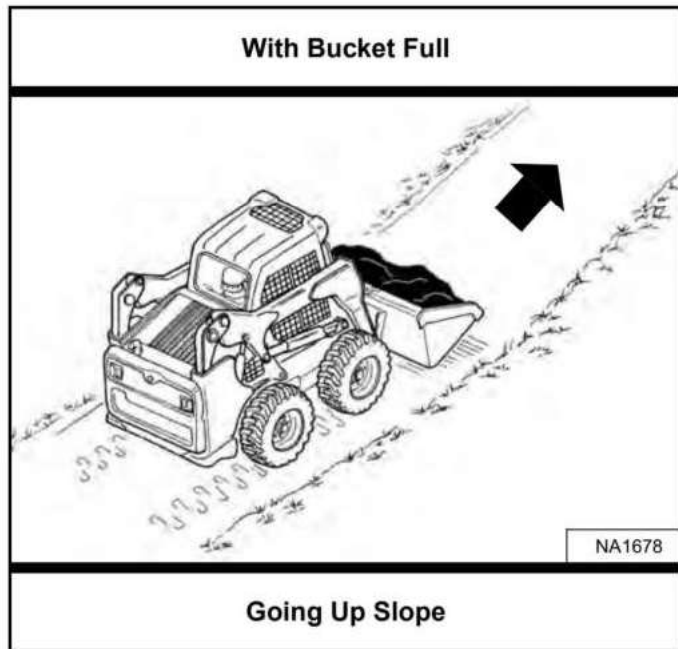
When operating on a public road or motorway, always follow local regulations. For example: Slow Moving Vehicle Sign or direction signals may be required.

NOTE: Road kits are available as an option from the factory or as a kit from your Bobcat dealer to equip your machine for driving on public roads in European Union (EU) countries.

Always follow local regulations. For more information, contact your local Bobcat dealer.

Operating With A Full Bucket

Figure 151



Operating With An Empty Bucket

Figure 153

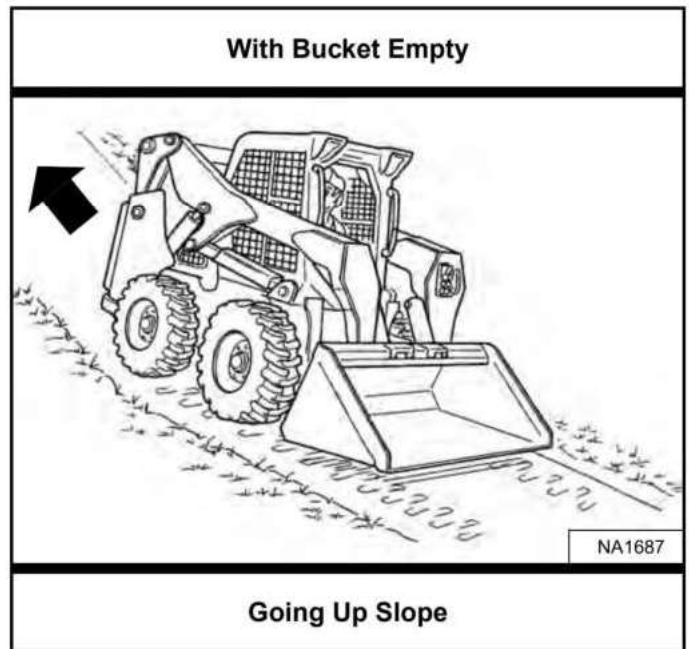


Figure 152

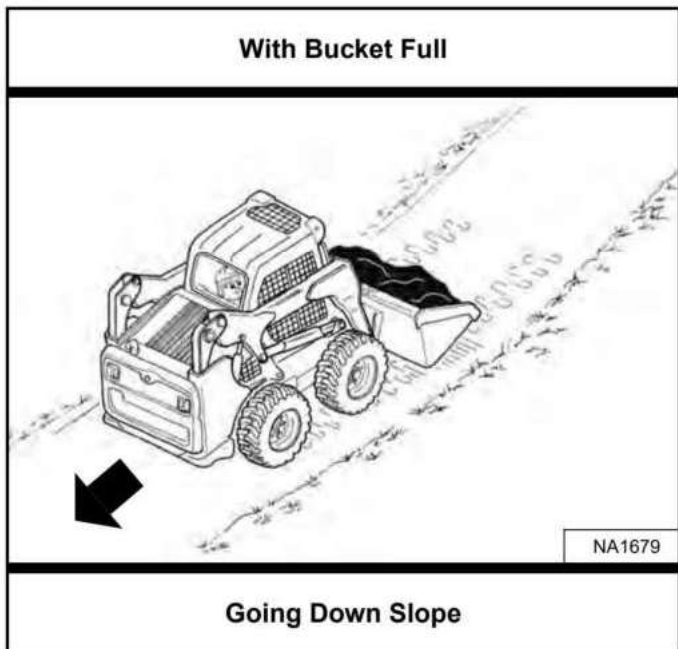
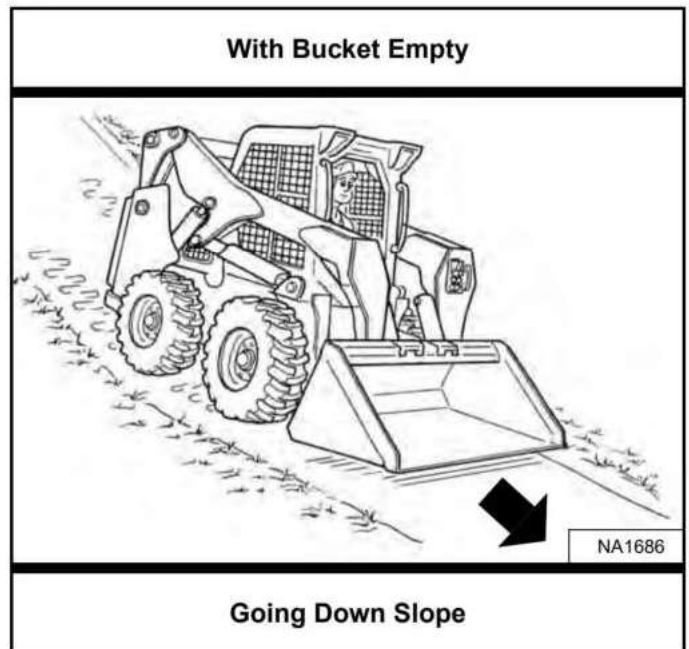


Figure 154



With a full bucket, go up or down the slope with the heavy end toward the top of the slope [Figure 151] and [Figure 152].

Raise the bucket only high enough to avoid obstructions on rough ground.

With an empty bucket, go up or down the slope with the heavy end toward the top of the slope [Figure 153] and [Figure 154].

Raise the bucket only high enough to avoid obstructions on rough ground.

TOWING THE LOADER

Procedure

Because of the design of the loader, there is not a recommended towing procedure.

- The loader can be lifted onto a transport vehicle.
- The loader can be skidded a short distance to move for service (EXAMPLE: Move onto a transport vehicle.) without damage to the hydrostatic system. (The tyres will not turn.) There may be slight wear to the tyres when the loader is skidded.

The towing chain (or cable) must be rated at 1.5 times the weight of the loader. (See Performance on Page 203.)

LIFTING THE LOADER

Single-Point Lift

! WARNING

AVOID INJURY OR DEATH

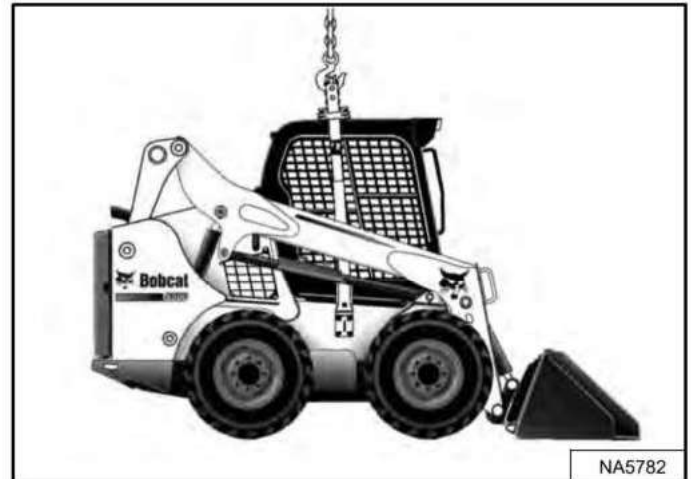
- Before lifting, check fasteners on single point lift and operator cab.
- Assemble front cab fasteners as shown in this manual.
- Never allow riders in the cab or bystanders within 5 m (15 ft) while lifting the machine.

W-2007-0910

The loader can be lifted with the Single-Point Lift that is available as a kit from your Bobcat loader dealer.

The Single-Point Lift, supplied by Bobcat, is designed to lift and support the Bobcat loader without affecting rollover and falling object protection features of the operator cab.

Figure 155



Attach lift to lift eye [Figure 155].

NOTE: Be sure the lifting equipment is of adequate size and capacity for the weight of the loader. (See Performance on Page 203.)

Four-Point Lift

! WARNING

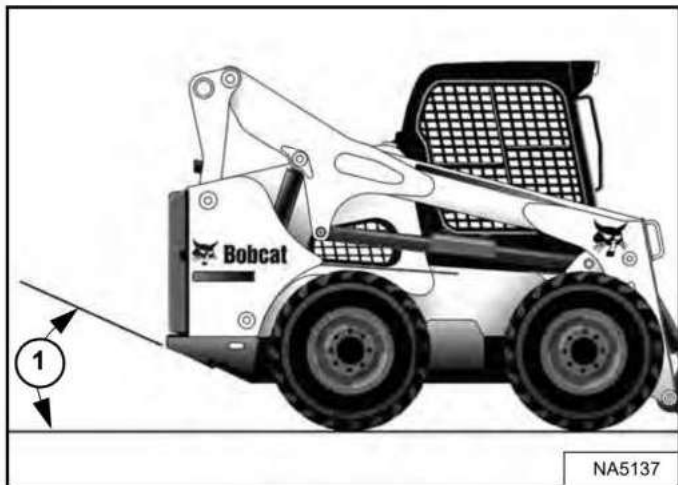
AVOID INJURY OR DEATH

- Before lifting, check fasteners on four point lift.
- Never allow riders in the cab or bystanders within 5 m (15 ft) while lifting the machine.

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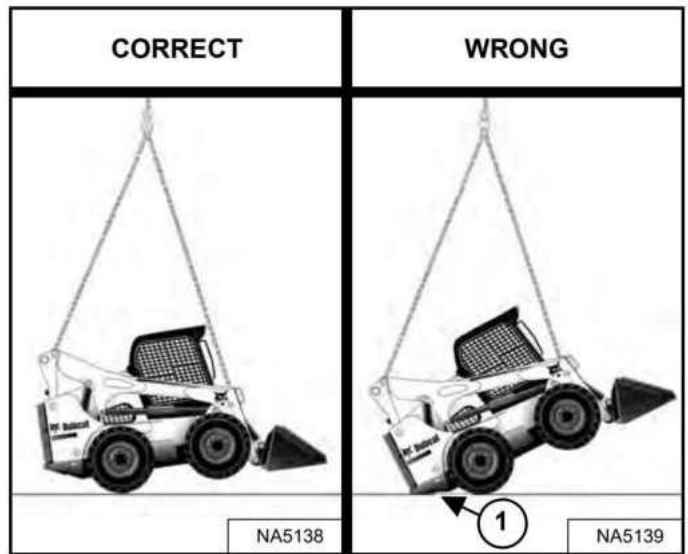
The loader can be lifted with the Four-Point Lift that is available as a kit from your Bobcat loader dealer.

Figure 156



NOTE: The loader should be lifted as close to horizontal as possible, but at no time should the angle of the suspended loader exceed the departure angle (Item 1) [Figure 156] provided in the specifications section. (See Machine Dimensions on Page 202.)

Figure 157



Attach cables or chains to lift eyes [Figure 157].

NOTE: Sling legs should not contact any part of the operator cab or lift arms to prevent damage.

NOTE: The required length of front and rear sling legs may or may not be equal depending on loader configuration. Departure angle (Item 1) [Figure 157] in this view has been exceeded, sling leg length must be adjusted to prevent this situation.

NOTE: Be sure the lifting equipment is of adequate size and capacity for the weight of the loader. (See Performance on Page 203.)

Dealer Conv -- Not for Resale

Loading And Unloading



AVOID SERIOUS INJURY OR DEATH

Adequately designed ramps of sufficient strength are needed to support the weight of the machine when loading onto a transport vehicle. Wood ramps can break and cause personal injury.

W-2058-0807

Be sure the transport and towing vehicles are of adequate size and capacity for weight of loader. (See Performance on Page 203.)

Figure 158

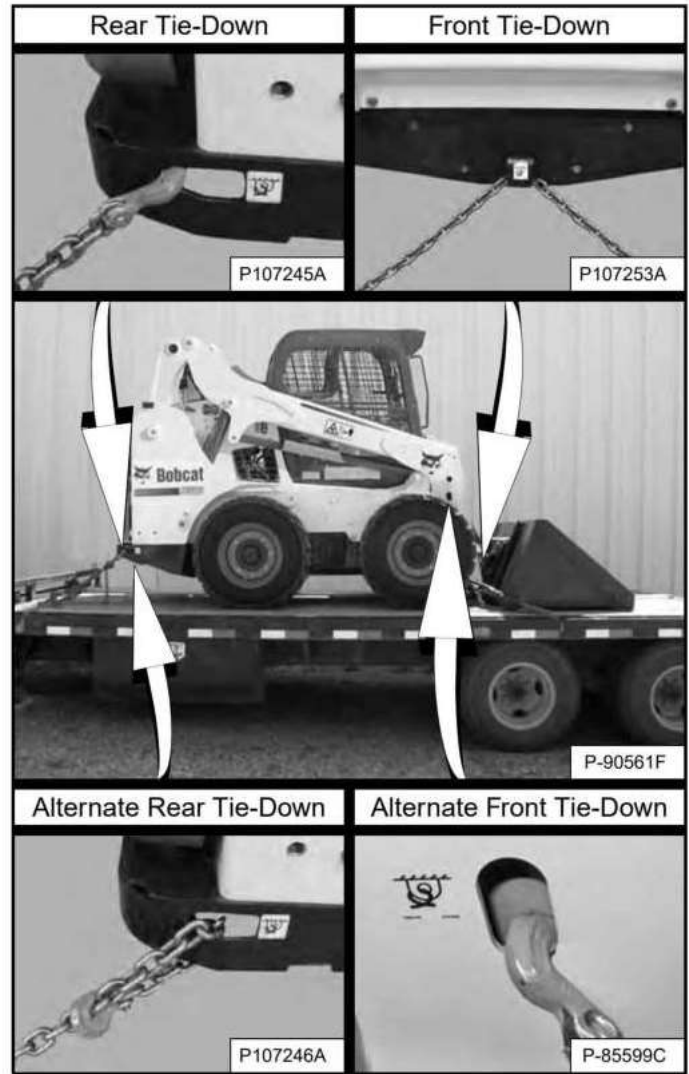


A loader with an empty bucket or no attachment must be loaded backward onto the transport vehicle [Figure 158].

The rear of the trailer must be blocked or supported (Item 1) [Figure 158] when loading or unloading the loader to prevent the front end of the trailer from raising up.

Fastening

Figure 159



Use the following procedure to fasten the Bobcat loader to the transport vehicle to prevent the loader from moving during sudden stops, or when going up or down slopes [Figure 159].

1. Lower the bucket or attachment to the floor.
2. Stop the engine.
3. Engage the parking brake.
4. Install chains at the front and rear loader tie-down positions [Figure 159]. (Lift arms shown raised for visual clarity.)
5. Fasten each end of the chain to the transport vehicle.
6. Use chain binders to tighten the chains.

Dealer Conv -- Not for Resale

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MAINTENANCE SAFETY



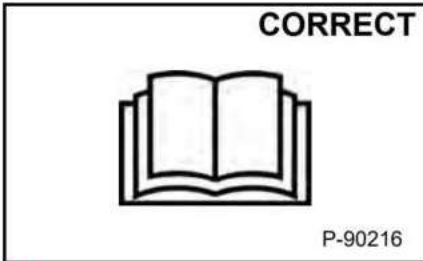
WARNING

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

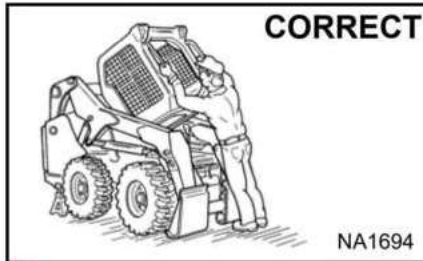
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Safety Alert Symbol: This symbol with a warning statement, means: "Warning, be alert! Your safety is involved!" Carefully read the message that follows.



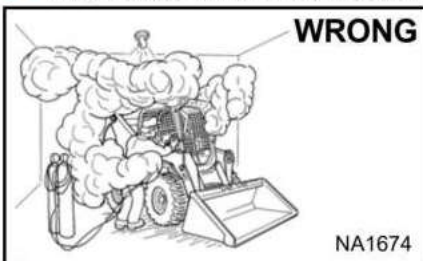
⚠ Never service the Bobcat Skid-Steer Loader without instructions.



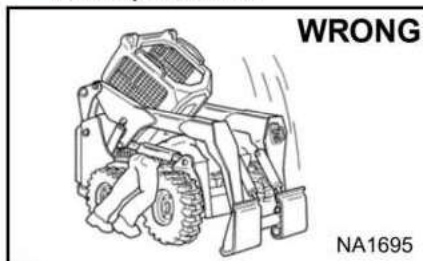
⚠ Use the correct procedure to lift or lower operator cab.



⚠ Cleaning and maintenance are required daily.



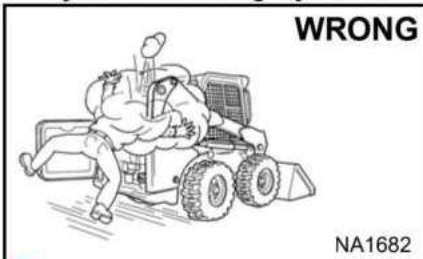
- ⚠ Have good ventilation when welding or grinding painted parts.
- ⚠ Wear dust mask when grinding painted parts. Toxic dust and gas can be produced.
- ⚠ Avoid exhaust fume leaks which can kill without warning. Exhaust system must be tightly sealed.



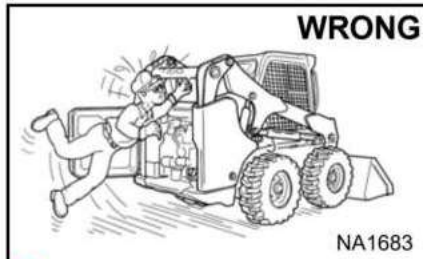
⚠ Disconnecting or loosening any hydraulic tubeline, hose, fitting, component or a part failure can cause lift arms to drop. Do not go under lift arms when raised unless supported by an approved lift arm support device. Replace it if damaged.



- ⚠ Never work on loader with lift arms up unless lift arms are held by an approved lift arm support device. Replace if damaged.
- ⚠ Never modify equipment or add attachments not approved by Bobcat Company.



- ⚠ Stop, cool and clean engine of flammable materials before checking fluids.
- ⚠ Never service or adjust loader with the engine running unless instructed to do so in the manual.
- ⚠ Avoid contact with leaking hydraulic fluid or diesel fuel under pressure. It can penetrate the skin or eyes.
- ⚠ Never fill fuel tank with engine running, while smoking or when near open flame.



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



- ⚠ Lead-acid batteries produce flammable and explosive gases.
- ⚠ Keep arcs, sparks, flames and lighted tobacco away from batteries.
- ⚠ Batteries contain acid which burns eyes or skin on contact.
- ⚠ Wear protective clothing. If acid contacts body, flush well with water. For eye contact flush well and get immediate medical attention.

Maintenance procedures which are given in the Operation & Maintenance Manual can be performed by the owner/operator without any specific technical training. Maintenance procedures which are **not** in the Operation & Maintenance Manual must be performed **ONLY BY QUALIFIED BOBCAT SERVICE PERSONNEL**. Always use genuine Bobcat replacement parts. The Service Safety Training Course is available from your Bobcat dealer.

MSW39-0609

SERVICE SCHEDULE

Maintenance Intervals

Maintenance work must be done at regular intervals. Failure to do so will result in excessive wear and early failures.

The service schedule is a guide for correct maintenance of the Bobcat loader.



WARNING

AVOID INJURY OR DEATH

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

W-2003-0807

Every 10 Hours (Before Starting The Loader)

- **Engine Oil** - Check level and add as needed. (See Page 148.)
- **Engine Air Filters and Air System** - Check display panel. Service only when required. Check for leaks and damaged components. (See Page 142.)
- **Engine Cooling System** - Clean debris from radiator, hydraulic fluid cooler, air conditioning condenser (if equipped), and rear grille. Check coolant level COLD and add premixed coolant as needed. (See Page 151.) or (See Page 153.) and (See Page 155.)
- **Fuel Filter** - Remove the trapped water. (See Page 146.)
- **Lift Arms, Lift Links, Cylinders, Bob-Tach, Pivot Pins, Wedges** - Lubricate with multipurpose lithium based grease. (See Page 179.)
- **Seat Belt, Seat Belt Retractors, Seat Bar, Control Interlocks** - Check the condition of seat belt. Clean or replace seat belt retractors as needed. Check the seat bar and control interlocks for correct operation. Clean dirt and debris from moving parts. (See Page 126.) and (See Page 128.)
- **Bobcat Interlock Control Systems (BICS™)** - Check for correct function. Lift and Tilt functions MUST NOT operate with seat bar raised. (See Page 125.)
- **Front Horn** - Check for proper function. (See Page 50.)
- **Tyres** - Check for damaged tyres and correct air pressure. Inflate to MAXIMUM pressure shown on the sidewall of the tyre. (See Page 171.)
- **Operator Cab** - Check the fastening bolts, washers, and nuts. Check the condition of the cab. (See Page 134.)
- **Indicators and Lights** - Check for correct operation of all indicators and lights. (See Page 39.)
- **Wheel Nuts** - Perform every 10 hours or daily for the first 30 hours, then as scheduled. Check for loose wheel nuts and tighten to correct torque. (See Page 171.)
- **Safety Signs and Safety Treads** - Check for damaged signs (decals) and safety treads. Replace any signs or safety treads that are damaged or worn. (See Page 20.) and (See Page 92.)
- **Hydraulic Fluid** - Check fluid level and add as needed. (See Page 163.)
- **Heater and Air Conditioning Filters** (if equipped) - Clean or replace filters as needed. (See Page 139.)

SERVICE SCHEDULE (CONT'D)

Maintenance Intervals (Cont'd)

Every 50 Hours

- **Hydraulic Hoses and Tubelines** - Check for damage and leaks. Repair or replace as needed.
- **Final Drive Transmission (Chaincase)** - Check fluid level and add as needed. (See Page 172.)
- **Parking Brake, Foot Pedals, Hand Controls and Steering Levers, or Joysticks** - Check for correct operation. Repair or adjust as needed.
- **Wheel Nuts** - Check for loose wheel nuts and tighten to correct torque. (See Page 171.)
- **Engine / Hydrostatic Drive Belt** - Perform at first 50 hours, then as scheduled. Check for wear or damage. Adjust or replace as needed. (See Page 175.)
- **Engine Oil and Filter** - Perform at first 50 hours, then as scheduled. Replace oil and filter. (See Page 149.)

Every 100 Hours

- **Spark Arrester** - Empty spark chamber. (See Page 170.)
- **Battery** - Check cables, connections, and electrolyte level; add distilled water as needed. (See Page 160.)
- **Engine Oil and Filter** - Perform every 100 hours when operating under severe conditions. Replace oil and filter. (See Page 149.)

Every 250 Hours or Every 12 Months

- **Fuel Filter** - Replace filter. (See Page 146.)
- **Engine / Hydrostatic Drive Belt** - Check for wear or damage. Adjust or replace as needed. (See Page 175.)
- **Drive Belts (Alternator, air conditioning, water pump)** - Check condition. Replace as needed. (See Page 173.) and (See Page 174.)
- **Bobcat Interlock Control System (BICS™)** - Check the function of the lift arm bypass control. (See Page 125.)
- **Engine Oil and Filter** - Replace oil and filter. (See Page 149.)

Every 500 Hours or Every 12 Months

- **Hydraulic Charge Filter, Hydraulic Reservoir Breather Cap** - Replace the charge filter and the reservoir breather cap. (See Page 167.) and (See Page 169.)
- **Heater Coil and Air Conditioning Evaporator** (if equipped) - Clean the heater coil and air conditioning evaporator. Clean the plenum drains. (See Page 140.)

Every 1000 Hours or Every 12 Months

- **Hydraulic / Hydrostatic Filter** - Replace the hydraulic / hydrostatic filter. (See Page 166.)
- **Hydraulic Reservoir** - Replace the fluid. (See Page 164.)
- **Final Drive Transmission (Chaincase)** - Replace the fluid. (See Page 172.)
- **Engine Valves** - Adjust the engine valve clearance.

Every 24 Months

- **Coolant** - Replace the coolant. (See Page 156.)

NOTE: The Inspection Checkbook can be ordered for you by your local dealer. Part number 7296478.

SERVICE SCHEDULE (CONT'D)

Inspection Checkbook

Maintenance work must be done at regular intervals. Failure to do so will result in excessive wear and early failures.

The service schedule is a guide for correct maintenance of the Bobcat loader.

The Inspection Checkbook contains the following information:

- Doosan Bobcat EMEA s.r.o. Warranty Policy
- Doosan Bobcat EMEA s.r.o. Extended Warranty Policy

The Inspection Checkbook has to be filled in by the Dealer for any maintenance and service work of your Bobcat machine. This book may be required anytime by an authorised dealer or by Bobcat Europe, should a breakdown occur on the Bobcat equipment.

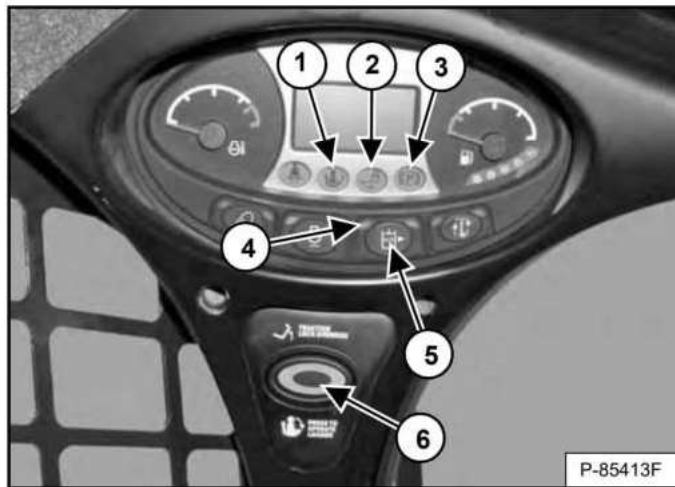
Your local dealer can order the Inspection Checkbook. Part number: 7296478.

BOBCAT INTERLOCK CONTROL SYSTEM (BICS™)

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 122.)

Inspecting The BICS™ (Engine STOPPED - Key ON)

Figure 160



1. Sit in operator's seat. Turn key switch to RUN. Lower seat bar and disengage parking brake. Press the PRESS TO OPERATE LOADER button (Item 6). Two BICS™ lights (Items 1 and 2) [Figure 160] [SEAT BAR and LIFT AND TILT VALVE] on left instrument panel must be OFF. The PRESS TO OPERATE LOADER button will light.
2. Raise seat bar fully. All three BICS™ lights (Items 1, 2, and 3) [Figure 160] [SEAT BAR, LIFT AND TILT VALVE, and PARKING BRAKE] on left instrument panel must be ON. The PRESS TO OPERATE LOADER button light will turn OFF.

Inspecting Deactivation Of The Auxiliary Hydraulics System (Engine STOPPED - Key ON)

3. Sit in operator's seat, lower seat bar, and press the PRESS TO OPERATE LOADER button (Item 6). Press the Auxiliary Hydraulics button (Item 5). The auxiliary hydraulics light will turn ON (Item 4) [Figure 160]. Raise the seat bar. The light will turn OFF.

Inspecting The Seat Bar Sensor (Engine RUNNING)

4. Sit in operator's seat, lower seat bar, engage parking brake, and fasten seat belt.
5. Start engine and operate at low idle. Press the PRESS TO OPERATE LOADER button. While raising the lift arms, raise the seat bar fully. The lift arms must stop. Repeat using the tilt function.

Inspecting The Traction Lock And Parking Brake (Engine RUNNING)

6. Fasten seat belt, disengage parking brake, press the PRESS TO OPERATE LOADER button, and raise seat bar fully. Move steering levers or joystick(s) slowly forward and backward. The TRACTION lock must be engaged. Lower the seat bar. Press the PRESS TO OPERATE LOADER button.
7. Engage parking brake and move steering levers or joystick(s) slowly forward and backward. The TRACTION lock must be engaged. See your Bobcat dealer for service if loader fails to stop.

NOTE: The PARKING BRAKE light on the left instrument panel will remain ON until the engine is started, the PRESS TO OPERATE LOADER button is pressed, and the parking brake is disengaged.

Inspecting The Lift Arm Bypass Control

8. Raise the lift arms 2 m (6 ft) off the ground. Stop engine. Turn lift arm bypass control knob 90° clockwise. Pull up and hold lift arm bypass control knob until lift arms slowly lower.

Inspecting Deactivation Of Lift And Tilt Functions (ACS, AHC, And SJC)

9. Sit in operator's seat and fasten seat belt. Lower seat bar, start engine, and press the PRESS TO OPERATE LOADER button.
10. Raise lift arms approximately 2 m (6 ft) off the ground.
11. Turn key switch to STOP and wait for the engine to come to a complete stop.
12. Turn key switch to RUN. Press the PRESS TO OPERATE LOADER button, move the control (foot pedal, hand control, or joystick) to lower the lift arms. Lift arms must not lower.
13. Move the control (foot pedal, hand control, or joystick) to tilt the bucket (or attachment) forward. The bucket (or attachment) must not tilt forward.

! WARNING

AVOID INJURY OR DEATH

The Bobcat Interlock Control System (BICS™) must deactivate the lift, tilt and traction drive functions. If it does not, contact your dealer for service. DO NOT modify the system.

W-2151-1111

SEAT BAR RESTRAINT SYSTEM

Description

Figure 161



The seat bar restraint system has a pivoting seat bar with armrests (Item 1) [Figure 161].

The operator controls the use of the seat bar. The seat bar in the down position helps to keep the operator in the seat.

Models with Standard Controls have hydraulic valve spool interlocks for the lift and tilt functions. The spool interlocks require the operator to lower the seat bar in order to operate the foot pedal controls.

When the seat bar is down, the engine is running, the PRESS TO OPERATE LOADER button is activated, and the brake is released; the lift, tilt, and traction drive functions can be operated.

When the seat bar is up, the lift and tilt control pedals are locked when returned to the NEUTRAL position.

Models with Advanced Control System (ACS) have mechanical interlocks for the handles and pedals. The interlocks for the handles and pedals require the operator to lower the seat bar in order to operate the selected controls.

When the seat bar is down, the engine is running, the PRESS TO OPERATE LOADER button is activated, and the brake is released; the lift, tilt, and traction drive functions can be operated.

When the seat bar is up, the handles and pedals are locked when returned to the NEUTRAL position.

Models with Advanced Hand Controls (AHC) have mechanical interlocks for the handles. The interlocks for the handles require the operator to lower the seat bar in order to operate the controls.

When the seat bar is down, the PRESS TO OPERATE LOADER button is activated and the engine is running, the lift, tilt and traction drive functions can be operated using the handles.

When the seat bar is up, the handles are locked when returned to the NEUTRAL position.

Models with Selectable Joystick Controls (SJC) have electrical deactivation of lift and tilt functions. Activation of functions require the operator to lower the seat bar.

When the seat bar is down, the engine is running, the PRESS TO OPERATE LOADER button is activated, and the brake is released; the lift, tilt, and traction drive functions can be operated.

When the seat bar is up, the lift and tilt functions are deactivated even though the joysticks do not mechanically lock.

SEAT BAR RESTRAINT SYSTEM (CONT'D)

Inspection And Maintenance

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 122.)

Sit in the seat and fasten the seat belt. Engage the parking brake. Pull the seat bar all the way down. Start the engine. Press the PRESS TO OPERATE LOADER button.

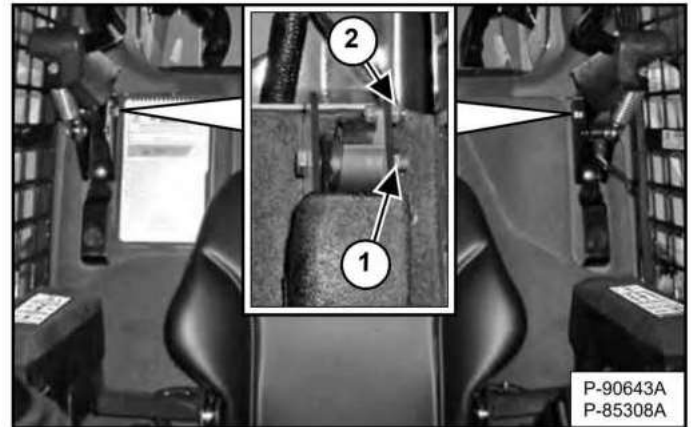
Operate the hydraulic controls to check that the lift and tilt functions operate correctly. Raise the lift arms until the attachment is approximately 600 mm (2 ft) off the ground.

Raise the seat bar. Move the hydraulic controls. Pedals and handles (if equipped) must be firmly locked in the NEUTRAL position (except joysticks). There must be no motion of the lift arms or tilt (attachment) when the controls are moved.

Lower the seat bar, press the PRESS TO OPERATE LOADER button, and lower the lift arms. Operate the lift control. While the lift arms are going up, raise the seat bar. The lift arms must stop.

Lower the seat bar, press the PRESS TO OPERATE LOADER button, lower the lift arms, and put the attachment flat on the ground. Stop the engine. Raise the seat bar. Operate the foot pedals and handles (if equipped) to be sure they are firmly locked in the NEUTRAL position (except joysticks).

Figure 162



Use compressed air to clean any debris or dirt from the pivot parts. Do not lubricate. Inspect all mounting hardware. The correct hinge nut (both sides) (Item 1) torque is 34 - 38 N•m (25 - 28 ft-lb). The seat bar sensor nut (left side only) (Item 2) [Figure 162] torque is 6 - 8 N•m (50 - 70 in-lb).

If the seat bar system does not function correctly, replace parts that are worn or damaged. Use only genuine Bobcat replacement parts.

WARNING

The seat bar system must deactivate the lift and tilt control functions when the seat bar is up. See your Bobcat dealer for service if hydraulic controls do not deactivate.

W-2465-0111

SEAT BELT

Inspection And Maintenance

! WARNING

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

W-2466-0703

Check the seat belt daily for correct function.

Inspect the seat belt system thoroughly at least once each year, or more often if the machine is exposed to severe environmental conditions or applications.

Any seat belt system that shows cuts, fraying, extreme or unusual wear, significant discolourations due to ultraviolet UV exposure, dusty / dirty conditions, abrasion to the seat belt webbing, or damage to the buckle, latch plate, retractor (if equipped), hardware, or any other obvious problem should be replaced immediately.

The items below are referenced in **[Figure 163]**.

1. Check the webbing. If the system is equipped with a retractor, pull the webbing completely out and inspect the full length of the webbing. Look for cuts, wear, fraying, dirt, and stiffness.
2. Check the buckle and latch for correct operation. Make sure latch plate is not excessively worn or deformed and buckle is not damaged or casing broken.
3. Check the retractor web storage device (if equipped) by extending webbing to determine if it looks correct, and that it spools out and retracts webbing correctly.
4. Check webbing in areas exposed to ultraviolet (UV) rays from the sun, or extreme dust or dirt. If the original colour of the webbing in these areas is extremely faded and / or the webbing is packed with dirt, the webbing strength may have deteriorated.
5. Check the hardware on both sides of the seat. Hardware should be tight. Hardware must not be missing, rusted, corroded, or damaged.

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

Figure 163



LIFT ARM SUPPORT DEVICE

Description

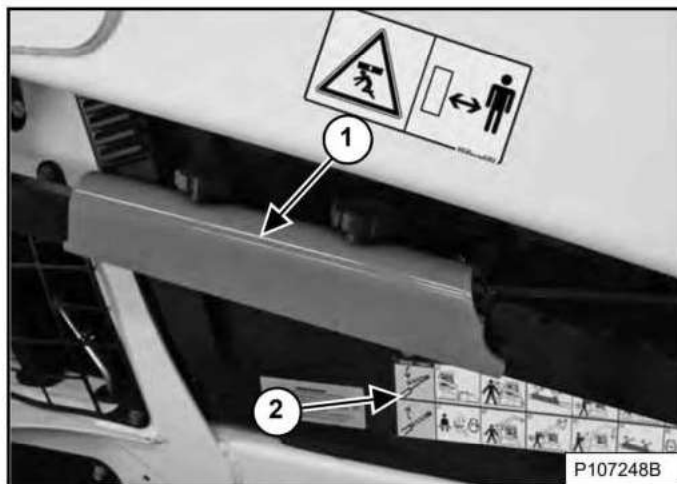
WARNING

Never work on a machine with the lift arms up unless the lift arms are secured by an approved lift arm support device. Failure to use an approved lift arm support device can allow the lift arms or attachment to fall and cause injury or death.

Service lift arm support device if damaged or if parts are missing. Using a damaged lift arm support or with missing parts can cause lift arms to drop causing injury or death.

W-2572-0407

Figure 164

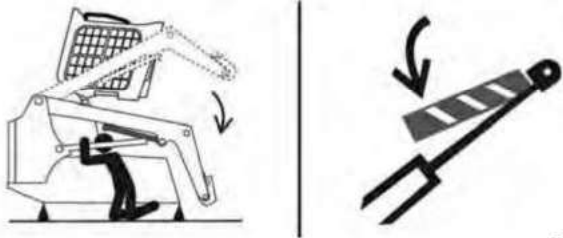


The lift arm support device (Item 1) [Figure 164] is used to support the lift arms while working on a machine with the lift arms up.

A decal (Item 2) [Figure 164] located on the right side of the operator cab provides instructions for installing and removing the lift arm support device.

The procedures are described in more detail on the following pages. (See Installing on Page 130.) and (See Removing on Page 131.)

Installing



P-90328

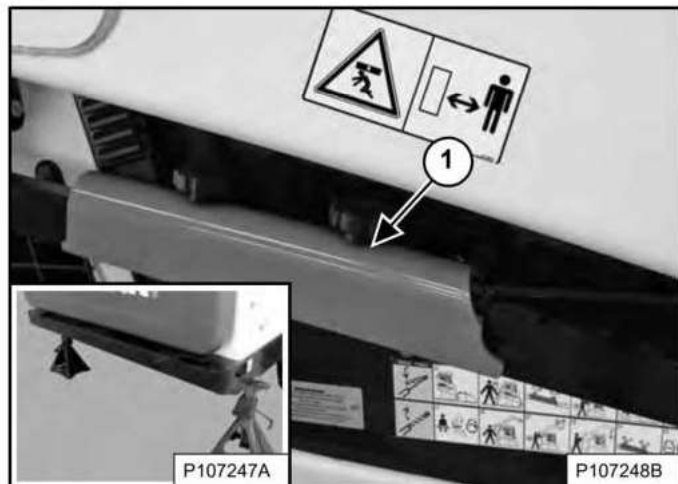
AVOID DEATH

- Disconnecting or loosening any hydraulic tubeline, hose, fitting, component or a part failure can cause lift arms to drop.
- Keep out of this area when lift arms are raised unless supported by an approved lift arm support. Replace if damaged.

D-1009-0409

Remove attachment from the loader. (See Installing And Removing The Attachment (Hand Lever Bob-Tach) on Page 107.) **OR** (See Installing And Removing The Attachment (Power Bob-Tach) on Page 110.)

Figure 165



Put jackstands under the rear corners of the loader frame (Inset) [Figure 165].

Remove the lift arm support device (Item 1) [Figure 165] from the storage position.

The operator must stay in the operator seat with the seat belt fastened and the seat bar lowered until the lift arm support device is installed.

Start the engine and raise the lift arms all the way up.

Figure 166

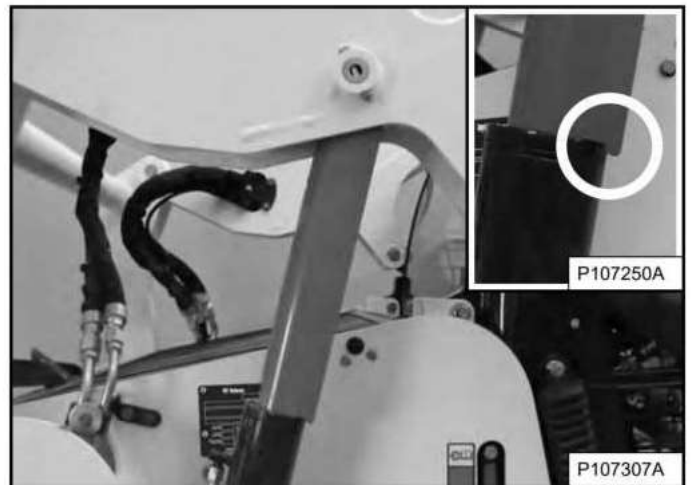


P-90567E

Have a second person install the lift arm support device over the rod of one of the lift cylinders [Figure 166].

The lift arm support device must be tight against the cylinder rod.

Figure 167



Lower the lift arms slowly until the lift arm support device is held between the lift arms and the lift cylinder. The tabs of the lift arm support device must go past the end of the cylinder (Inset) [Figure 167].

Removing



P-90328

AVOID DEATH

- Disconnecting or loosening any hydraulic tubeline, hose, fitting, component or a part failure can cause lift arms to drop.
- Keep out of this area when lift arms are raised unless supported by an approved lift arm support. Replace if damaged.

D-1009-0409

The operator must be in the operator's seat, with the seat belt fastened and seat bar lowered, until the lift arm support device is removed, and the lift arms are lowered all the way.

NOTE: The lift arm support device should remain resting on the cylinder barrel when the lift arms are raised. Service or replace the lift arm support device if the lift arm support raises with the cylinder rod.

Start the engine and raise the lift arms all the way up.

Figure 168



Have a second person remove the lift arm support device [Figure 168] after the lift arms are all the way up.

Lower the lift arms all the way and stop the engine.

Figure 169



Return the lift arm support device to the storage position and secure with clamping knobs [Figure 169].

Remove the jackstands.

BACK-UP ALARM SYSTEM

This machine may be equipped with a Back-up Alarm.

Description

The back-up alarm will sound when the operator moves both steering levers or joystick(s) into the reverse position. Slight movement of the controls into the reverse position is required with hydrostatic transmissions, before the back-up alarm will sound.

Inspection

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 122.)

Figure 170



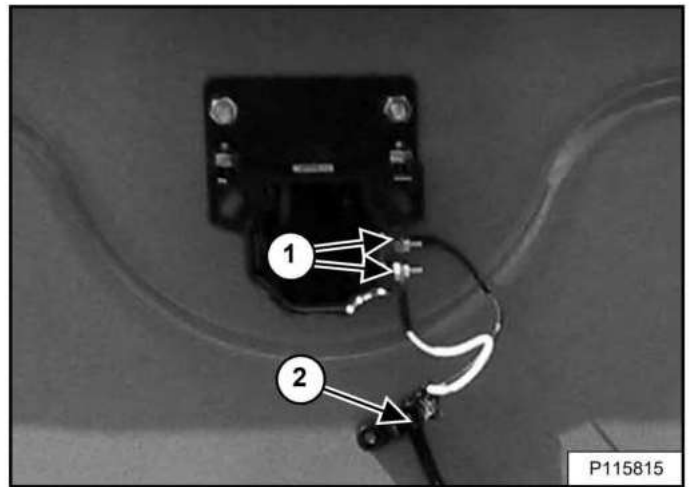
Inspect for damaged or missing back-up alarm decal (Item 1) [Figure 170]. Replace if required.

Sit in the seat and fasten the seat belt. Engage the parking brake. Pull the seat bar all the way down. Start the engine. Press the PRESS TO OPERATE LOADER button. Disengage the parking brake.

Move both steering levers or joystick(s) into the reverse position. The back-up alarm must sound when all wheels or both tracks are moving in reverse.

The back-up alarm is located on the inside of the rear door.

Figure 171



Inspect the back-up alarm electrical connections (Item 1) [Figure 171], wire harness (Item 2) [Figure 171], and back-up alarm switches (if equipped) (Item 1) [Figure 172] for tightness and damage. Repair or replace any damaged components.

If the back-up alarm switches require adjustment, (See Adjusting Switch Position on Page 133.)

BACK-UP ALARM SYSTEM (CONT'D)

Adjusting Switch Position

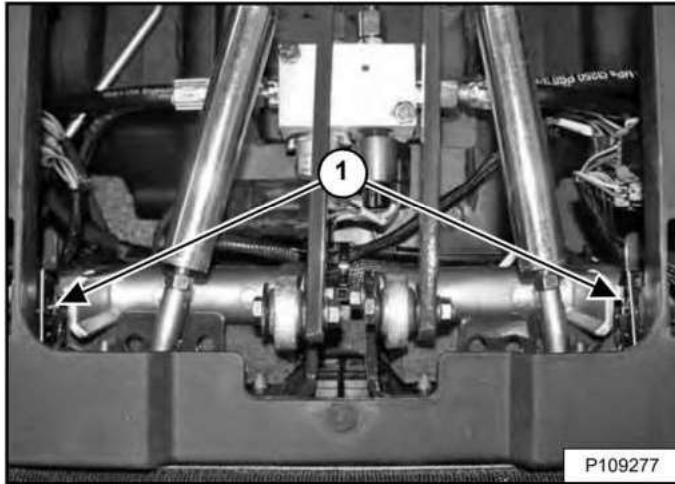
NOTE: Joystick equipped machines do not have back-up alarm switches and cannot be adjusted. See your Bobcat dealer for service if your back-up alarm does not sound.

Standard Controls, ACS, And AHC (If Equipped)

Stop the engine and raise the operator cab. (See Raising on Page 135.)

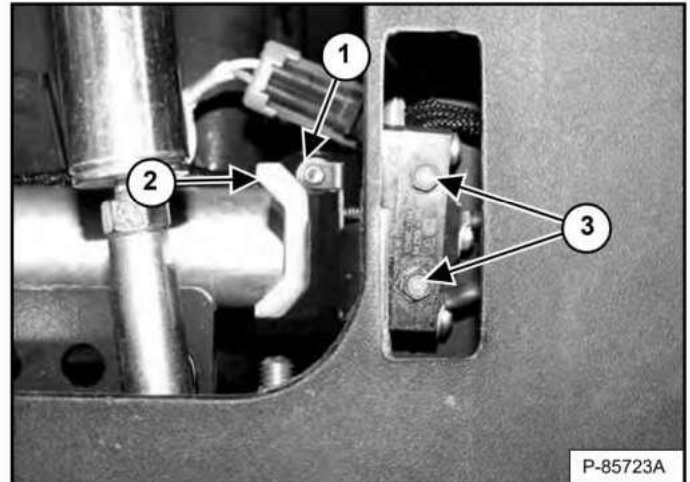
Put the steering levers in the NEUTRAL position.

Figure 172



The back-up alarm switches (Item 1) [Figure 172] are located alongside the steering bellcranks. Both switches must be adjusted properly for the back-up alarm to operate correctly.

Figure 173



Loosen the screws (Item 3) [Figure 173] securing the back-up alarm switch. (Left side shown)

Position the back-up alarm switch so that the roller (Item 1) just makes contact with the bellcrank (Item 2) [Figure 173] without compressing the switch spring.

Torque the screws (Item 3) [Figure 173] securing the switch to the bracket to 1,0 - 1,4 N•m (9 - 12 in-lb).

Repeat adjustment procedure for the other switch.

Lower the operator cab. (See Lowering on Page 136.)

Inspect back-up alarm system for proper function. (See Inspection on Page 132.)

OPERATOR CAB

Description

The Bobcat loader has an operator cab (ROPS and FOPS) as standard equipment to protect the operator from rollover and falling objects. The seat belt must be worn for rollover protection.

Check the cab, mounting, and hardware for damage. Never modify the cab. Replace the cab and hardware if damaged. See your Bobcat dealer for parts.

ROPS - Roll-Over Protective Structure per ISO 3471 and FOPS - Falling-Object Protective Structure per ISO 3449, Level I. Level II is available.

Level I

Protection from falling bricks, small concrete blocks, and hand tools encountered in operations, such as: motorway maintenance, landscaping, and other construction sites.

Level II

Protection from falling trees, rocks: for machines involved in site clearing, overhead demolition, or forestry.

WARNING

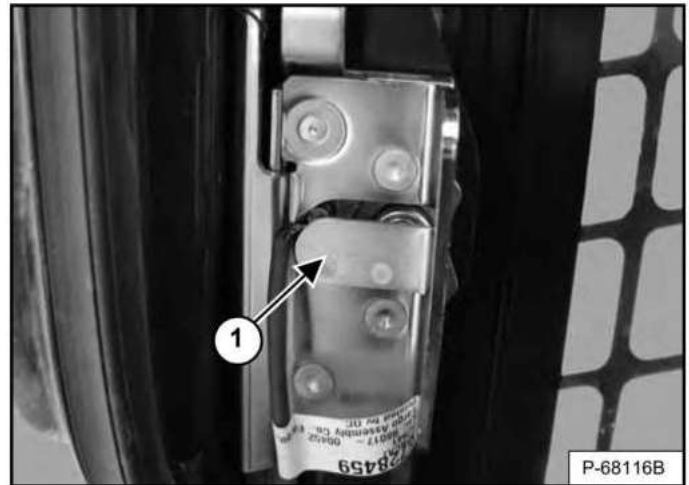
Never modify operator cab by welding, grinding, drilling holes or adding attachments unless instructed to do so by Bobcat Company. Changes to the cab can cause loss of operator protection from rollover and falling objects, and result in injury or death.

W-2069-0200

Cab Door Sensor

This machine may be equipped with a Cab Door Sensor.

Figure 174



The cab door has a sensor (Item 1) [Figure 174] installed that deactivates the lift and tilt valves when the door is open.

Figure 175



The LIFT AND TILT VALVE light (Item 1) [Figure 175] is OFF when the door is closed, the key switch is turned to RUN, the seat bar is lowered, and the PRESS TO OPERATE LOADER button is pressed.

The LIFT AND TILT VALVE light (Item 1) [Figure 175] is ON when the door is open, the key switch is turned to RUN, the seat bar is lowered, and the PRESS TO OPERATE LOADER button is pressed.

[DOOR] will appear in the data display (Item 2) [Figure 175] when the door is open, the key switch is turned to RUN, the seat bar is lowered, and the PRESS TO OPERATE LOADER button is pressed.

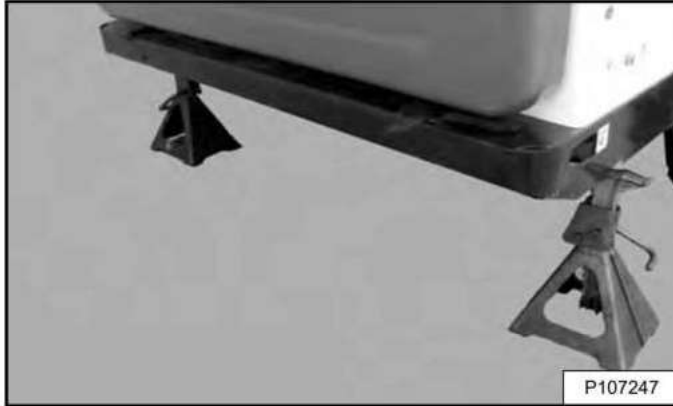
OPERATOR CAB (CONT'D)

Raising

Always stop the engine before raising or lowering the operator cab.

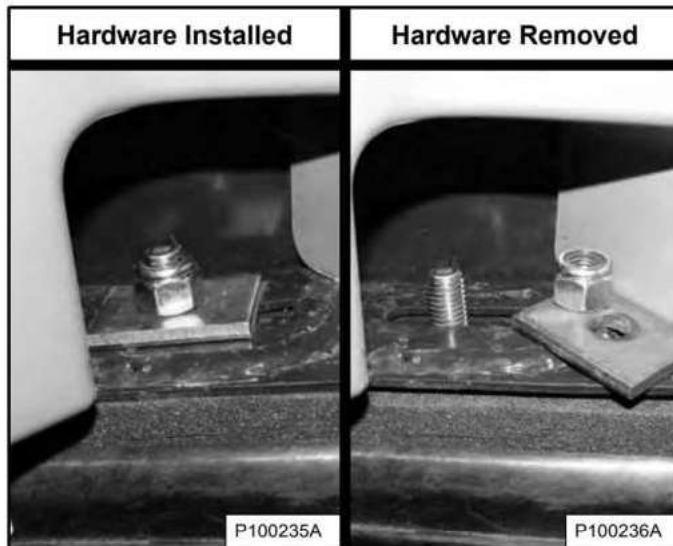
Stop the loader on a level surface. Lower the lift arms. If the lift arms must be up while raising the operator cab, install the lift arm support device. (See LIFT ARM SUPPORT DEVICE on Page 129.)

Figure 176



Install jackstands under the rear of the loader frame [Figure 176].

Figure 177



Remove the nuts and washers [Figure 177] (both sides) at the front corners of the operator cab.

WARNING

UNEXPECTED LOADER, LIFT ARM OR ATTACHMENT MOVEMENT CAUSED BY CAB CONTACT WITH CONTROLS CAN CAUSE SERIOUS INJURY OR DEATH

- **STOP ENGINE** before raising or lowering cab.

W-2758-0908

NOTE: On some machines, the operator cab frame can contact the steering levers while raising or lowering the operator cab. The engine **MUST** be stopped before raising or lowering the operator cab.

Figure 178



Lift on the grab handles and bottom of the operator cab [Figure 178] slowly until the operator cab is all the way up and the latching mechanism engages.

OPERATOR CAB (CONT'D)

Lowering

Always stop the engine before raising or lowering the operator cab.

NOTE: Always use the grab handles to lower the operator cab.

Figure 179



Pull down on the bottom of the operator cab until stopped by the latching mechanism [Figure 179].

NOTE: The weight of the operator cab increases when equipped with options and accessories, such as: cab door, heater, and air conditioning. In these cases, the operator cab may need to be raised slightly from the latch to be able to release the latch.

! WARNING

UNEXPECTED LOADER, LIFT ARM OR ATTACHMENT MOVEMENT CAUSED BY CAB CONTACT WITH CONTROLS CAN CAUSE SERIOUS INJURY OR DEATH

- **STOP ENGINE** before raising or lowering cab.

W-2758-0908

NOTE: On some machines, the operator cab frame can contact the steering levers while raising or lowering the operator cab. The engine **MUST** be stopped before raising or lowering the operator cab.

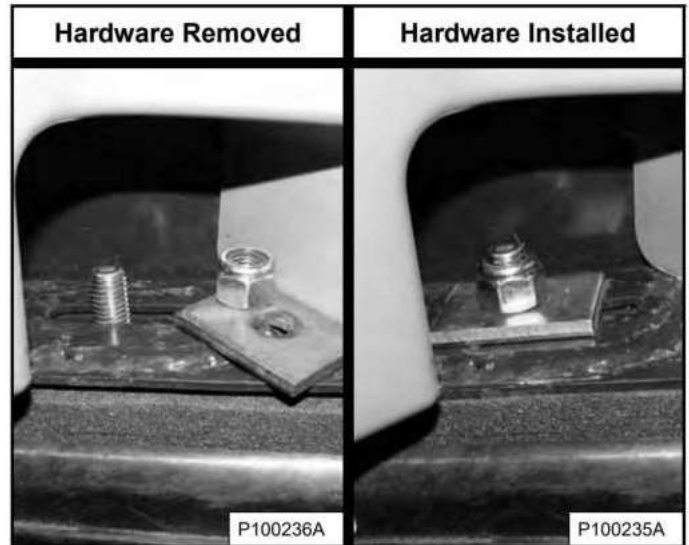
Support the operator cab and release the latching mechanism (Inset) [Figure 179]. Remove your hand from the latch mechanism when the operator cab is past the latch stop. Use both hands to lower the operator cab all the way down.

! WARNING

PINCH POINT CAN CAUSE INJURY
Remove your hand from the latching mechanism when the cab is past the latch stop.

W-2469-0803

Figure 180



Install the washers and nuts (both sides) [Figure 180].

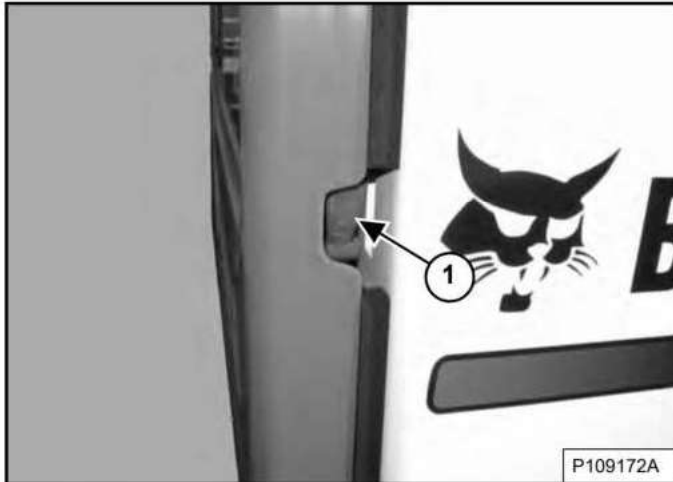
Tighten the nuts to 54 - 61 N•m (40 - 45 ft-lb) torque.

Remove the jackstands.

REAR DOOR (TAILGATE)

Opening And Closing

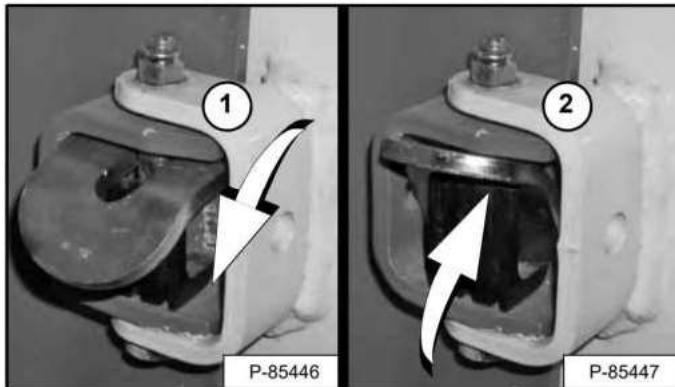
Figure 181



Reach into the slot on the right side of the rear door and pull the latch handle (Item 1) [Figure 181]. Pull the rear door open.

The rear door is equipped with a door stop feature on the top hinge.

Figure 182



Move the door stop into the engaged position (Item 1) to hold the door open. Move the door stop up (Item 2) [Figure 182] to allow the door to close.

WARNING

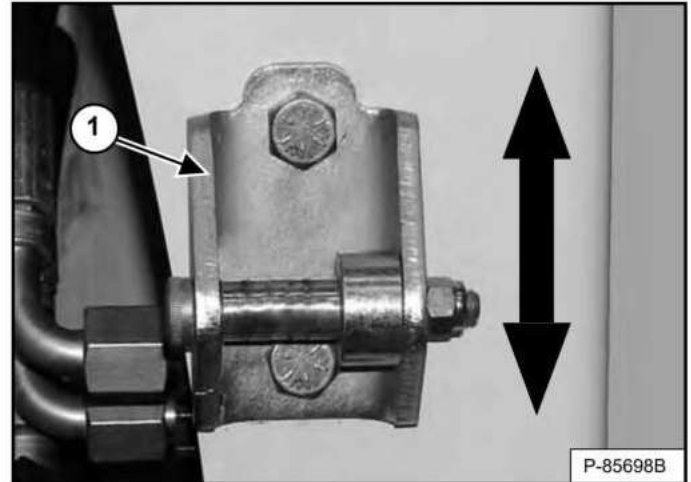
Keep the rear door closed when operating the machine. Failure to do so could seriously injure a bystander.

W-2020-1285

Close the rear door.

Adjusting Latch

Figure 183



The door latch striker (Item 1) [Figure 183] can be adjusted up or down for alignment with the door latch.

Close the rear door before operating the loader.

REAR GRILLE

Removing

Stop the engine and open the rear door.

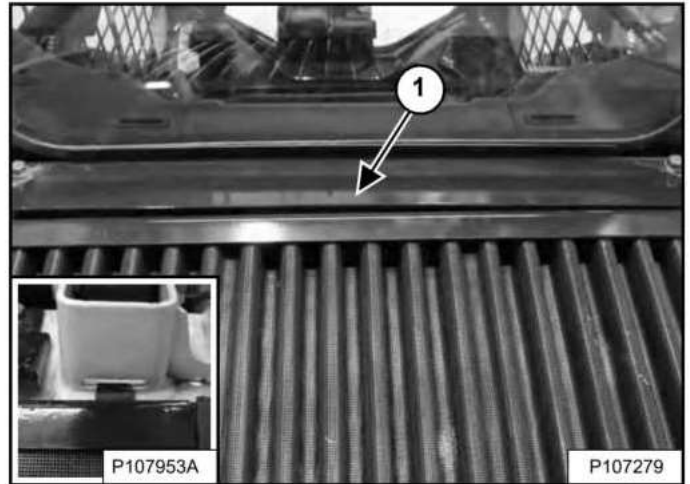
Figure 184



Lift and pull the rear grille backward to remove from the loader [Figure 184].

Installing

Figure 185



Align the edge of the rear grille under the shield (Item 1), insert the tabs into the slots (Right Side Shown) (Inset) [Figure 185], and lower.

Close the rear door.

HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) SYSTEM

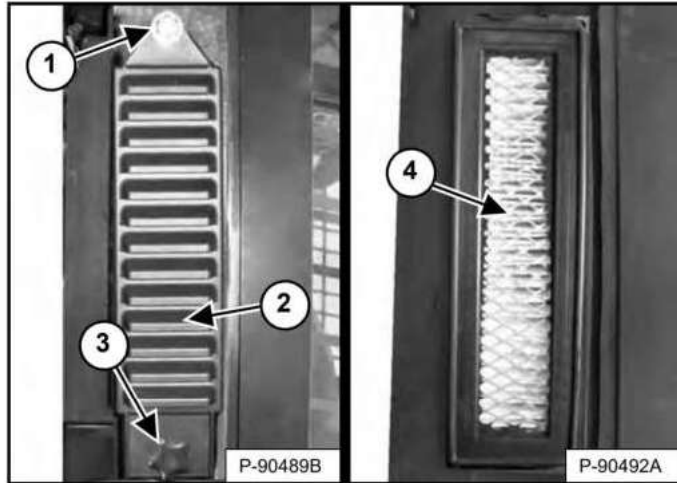
This machine may be equipped with a cab heater or HVAC system.

Filters

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 122.)

Fresh Air Filters

Figure 186



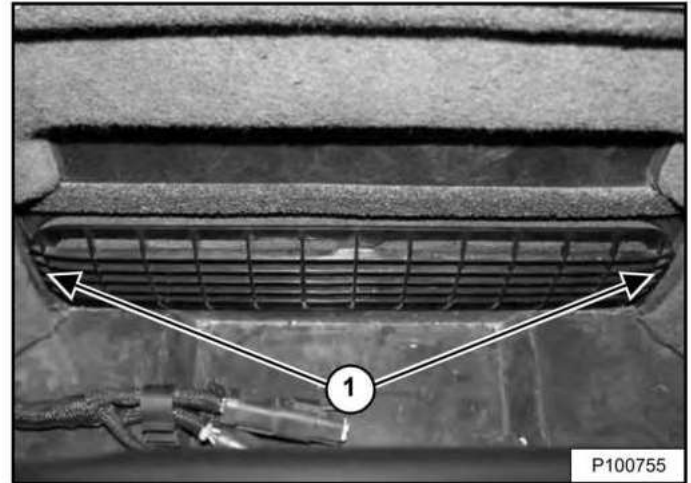
The fresh air filters are located behind the side windows outside the operator cab. (Right side shown) Remove the retaining screw (Item 3) and the filter cover (Item 2) [Figure 186]. (Lift arms shown raised for visual clarity.)

NOTE: Loosen the upper filter cover bolt (Item 1) [Figure 186] to allow removal and installation of the cover if equipped with the High-Efficiency Particulate Air (HEPA) filter kit.

Shake the filter (Item 4) [Figure 186] or use low pressure air to remove dirt. This procedure can be done several times before replacement is required. Install the filter, the filter cover, and the retaining screw.

Recirculation Filter

Figure 187



The recirculation filter is located behind the operator's seat inside the operator cab. The filter cover is held in position with three clips. Pull the cover at each end (Item 1) [Figure 187] to remove.

Rinse the filter with water or use a vacuum cleaner to clean. Do not use solvents.

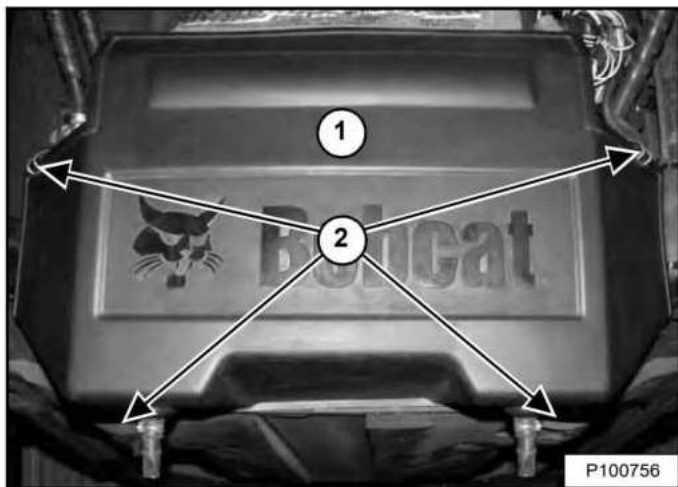
Line up the clips on the filter cover with the slots provided and push the cover into position.

Air Conditioning Evaporator / Heater Coil

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 122.)

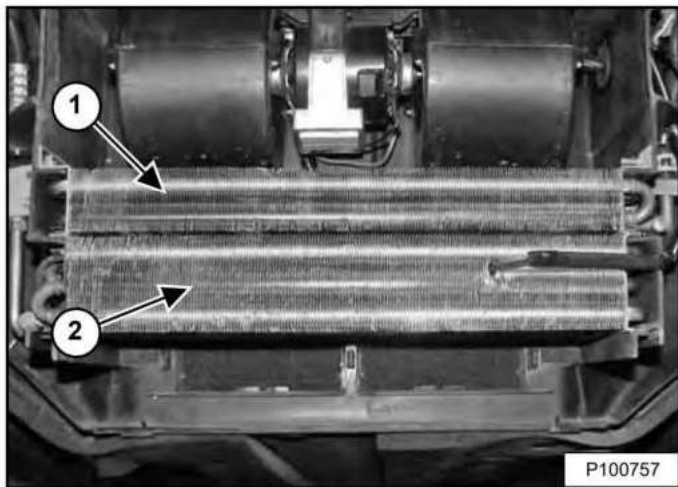
Stop the engine and raise the operator cab. (See Raising on Page 135.)

Figure 188



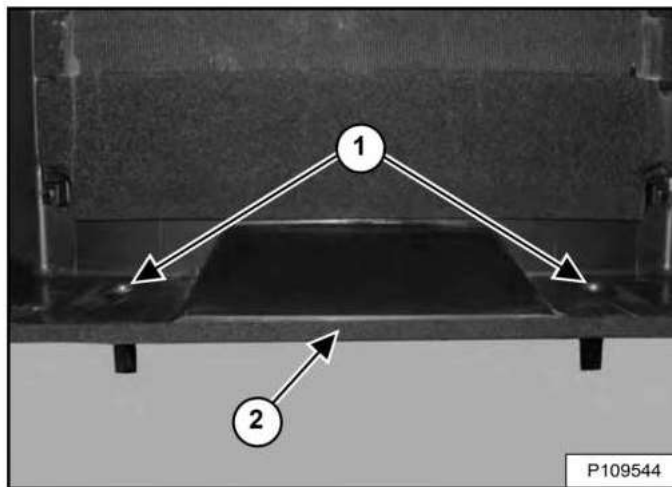
Unhook the cover latches (Item 2) and remove the cover (Item 1) [Figure 188].

Figure 189



Use low pressure air or water to remove debris from the heater coil (Item 1) and evaporator (Item 2) [Figure 189].

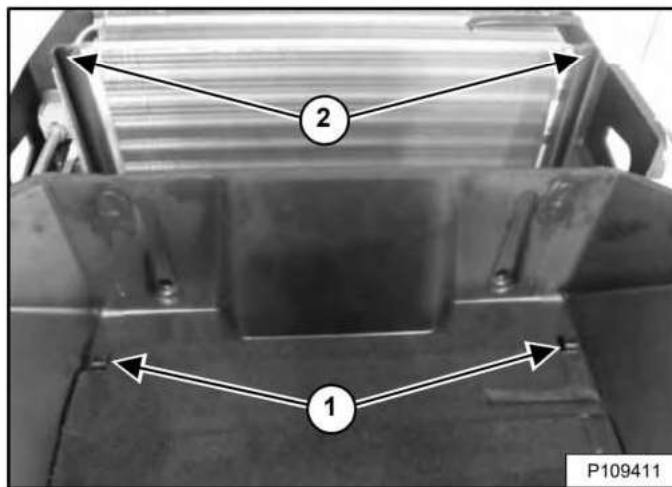
Figure 190



Clean the plenum drains (Item 1) [Figure 190] to ensure they are not plugged by debris.

Inspect the cover seal (Item 2) [Figure 190] for breaks and tears. Ensure the seal is firmly attached all around the cover. See your Bobcat dealer for a replacement seal.

Figure 191



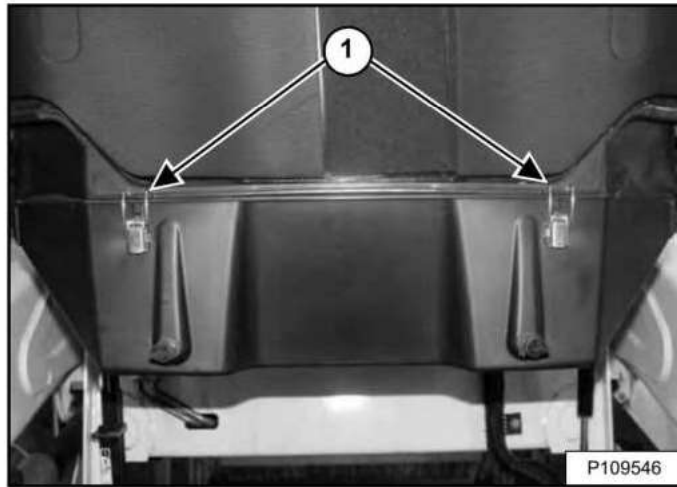
NOTE: The bosses (Item 1) fit inside the core supports (Item 2) [Figure 191] when the cover is installed. Deformity of the cover indicates they are out of position.

Dealer Conv. -- Not for Resale

Air Conditioning Evaporator / Heater Coil (Cont'd)

NOTE: Improper cover installation can damage the seal, which may lead to HVAC component failure. Perform the following steps in the order given to prevent cover seal damage.

Figure 192



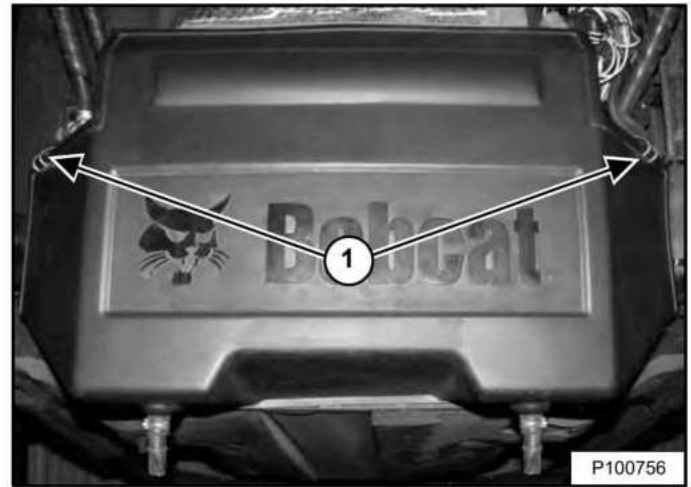
1. Hold the cover in place and fasten two latches (Item 1) [Figure 192].

Figure 193



2. Push the cover up in three places (Items 1, 2, and 3) until the slots snap into place on the tabs. This slot (Inset) [Figure 193] is correctly fastened.

Figure 194



3. Fasten the two remaining latches (Item 1) [Figure 194].

NOTE: Perform a thorough visual check to ensure that the cover and the cover seal are not deformed. The cover should seal tightly all around without any gaps.

Lower the operator cab. (See Lowering on Page 136.)

Air Conditioning Condenser

The condenser should be cleaned with the hydraulic fluid cooler and the radiator. (See Cleaning (Earlier Models) on Page 151.) or (See Cleaning (Later Models) on Page 153.)

Air Conditioning Lubrication

Operate the air conditioning for approximately 5 minutes every week to lubricate the internal components.

Troubleshooting

If the fan does not operate or the air conditioning does not turn on, check the fuse. (See Fuse And Relay Location / Identification on Page 157.) The refrigerant may need to be recharged if the air conditioning system circulates warm air.

Dealer Conv -- Not for Resale

ENGINE AIR CLEANER

Replacing Filters

Figure 195



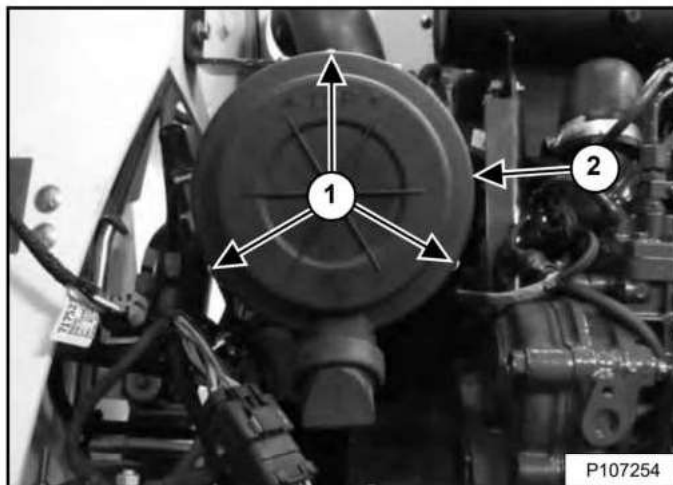
Replace the air filters only when necessary. The service indicator (Item 1) will FLASH. Press the Information button (Item 3) until the display screen shows the service codes. Service code **[M0117]** (Air Filter Plugged) will show in the display screen (Item 2) **[Figure 195]** when air filter replacement is necessary.

Replace the inner filter every third time the outer filter is replaced or as indicated.

Outer Filter

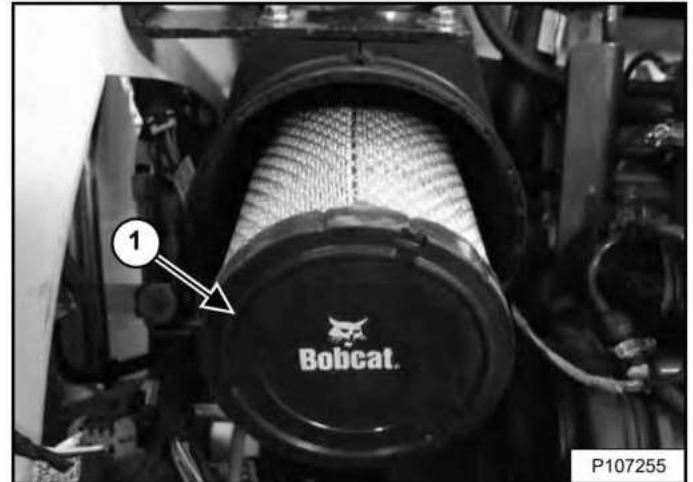
Stop the engine and open the rear door.

Figure 196



Open the latches (Item 1) and remove the cover (Item 2) **[Figure 196]**.

Figure 197



Remove the outer filter (Item 1) **[Figure 197]** and discard.

NOTE: Make sure the filter housing is free of dirt and debris. Verify that sealing surfaces are clean. DO NOT use compressed air.

Install new outer filter. Push in until the filter contacts the base of the housing. Install the cover and secure the latches **[Figure 196]**.

Close the rear door.

ENGINE AIR CLEANER (CONT'D)

Replacing Filters (Cont'd)

Inner Filter

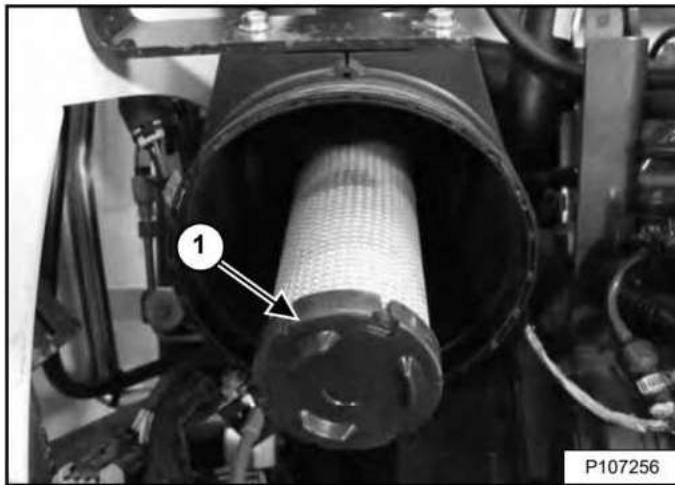
Replace the inner filter only under the following conditions:

- Replace the inner filter every *third* time the outer filter is replaced.
- After the outer filter has been replaced, start the engine and operate at full rpm. If service code **[M0117]** (Air Filter Plugged) is still displayed in the data display, replace the inner filter.

Stop the engine and open the rear door.

Remove the cover **[Figure 196]** and the outer filter **[Figure 197]**.

Figure 198



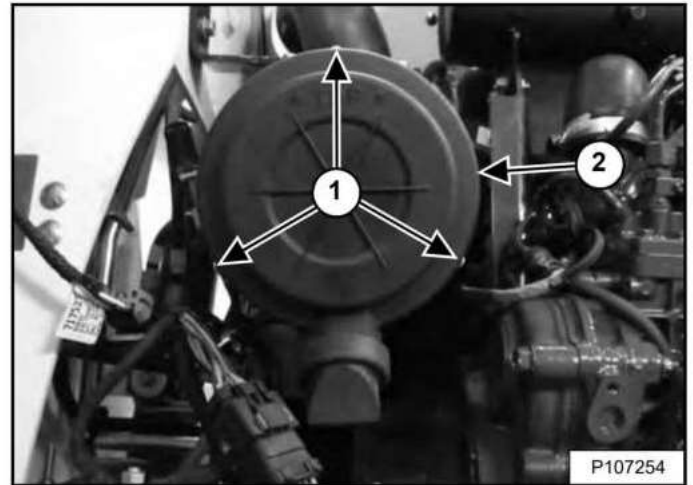
Remove the inner filter (Item 1) **[Figure 198]**.

NOTE: Make sure the filter housing is free of dirt and debris. Verify that sealing surfaces are clean. DO NOT use compressed air.

Install new inner filter. Push in until the filter contacts the base of the housing.

Install the outer filter **[Figure 197]**.

Figure 199



Install the cover (Item 2) and secure the latches (Item 1) **[Figure 199]**.

Close the rear door.

FUEL SYSTEM

Fuel Specifications

NOTE: Contact your local fuel supplier to receive recommendations for your region.

At a minimum, low sulfur diesel fuel must be used in this machine. Low sulfur is defined as 500 mg/kg (500 ppm) sulfur maximum.

U.S. Standard (ASTM D975)

Use only clean, high quality diesel fuel, Grade Number 2-D or Grade Number 1-D.

Ultra low sulfur diesel fuel may also be used in this machine. Ultra low sulfur is defined as 15 mg/kg (15 ppm) sulfur maximum.

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

TEMPERATURE	GRADE 2-D	GRADE 1-D
Above -9°C (+15°F)	100%	0%
Down to -21°C (-5°F)	50%	50%
Below -21°C (-5°F)	0%	100%

NOTE: Biodiesel blend fuel may also be used in this machine. Biodiesel blend fuel must contain no more than five percent biodiesel mixed with ultra low sulfur petroleum based diesel. This biodiesel blend fuel is commonly marketed as B5 blended diesel fuel. B5 blended diesel fuel must meet ASTM specifications.

E.U. Standard (EN590)

Use only clean, high quality diesel fuel that meets the specifications listed below:

- Low sulfur diesel fuel defined as 500 mg/kg (500 ppm) sulfur maximum
- Diesel fuel with cetane number of 51.0 and above.

Clean, high quality diesel fuel that meets the EN590 specification may also be used.

NOTE: Biodiesel blend fuel may also be used in this machine. Biodiesel blend fuel must contain no more than seven percent biodiesel mixed with ultra low sulfur petroleum based diesel. This biodiesel blend fuel is commonly marketed as B7 blended diesel fuel. B7 blended diesel fuel must meet EN590 specifications.

Biodiesel Blend Fuel

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

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

Apply the following guidelines if biodiesel blend fuel is used:

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

NOTE: Biodiesel blend fuel does not have long term stability and should not be stored for more than 3 months.

Filling The Fuel Tank



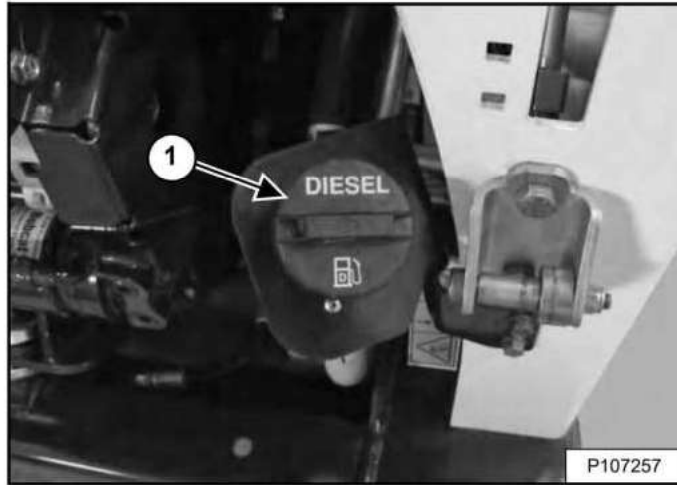
AVOID INJURY OR DEATH

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

W-2063-0807

Stop the engine and open the rear door.

Figure 200



Remove the fill cap (Item 1) [Figure 200].

Figure 201



Use a clean, approved safety container to add fuel of the correct specification. Add fuel only in an area that has free movement of air and no open flames or sparks. **NO SMOKING** [Figure 201].

Install and tighten the fuel cap (Item 1) [Figure 200].

Close the rear door.



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

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FUEL SYSTEM (CONT'D)

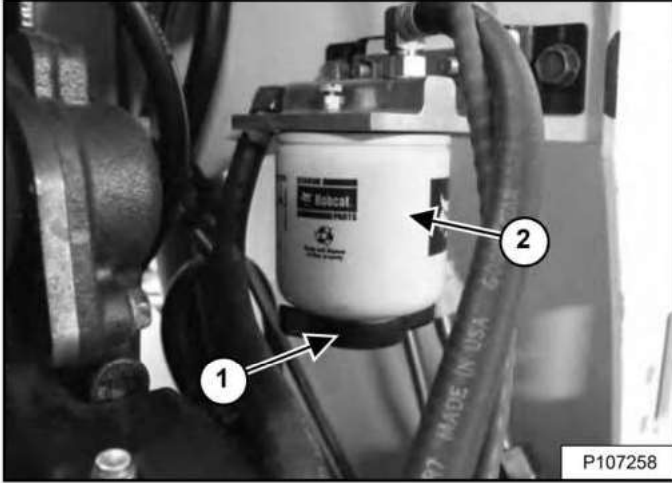
Fuel Filter

Removing Water

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 122.)

Stop the engine and open the rear door.

Figure 202



Loosen the drain (Item 1) [Figure 202] at the bottom of the filter to remove trapped water from the filter.

Securely tighten the drain.

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

Close the rear door.

Replacing Filter

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 122.)

Stop the engine and open the rear door.

Remove the fuel filter (Item 2) [Figure 202].

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

Remove air from the fuel system. (See Removing Air From The Fuel System on Page 147.)

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

Close the rear door.

Start the engine and allow to operate for one minute.

WARNING

AVOID INJURY OR DEATH

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

W-2072-EN-0909

Stop the engine and check for leaks at the filter.

FUEL SYSTEM (CONT'D)

Removing Air From The Fuel System

After replacing the filter or if the fuel tank has run out of fuel, the air must be removed from the fuel system before starting the engine.

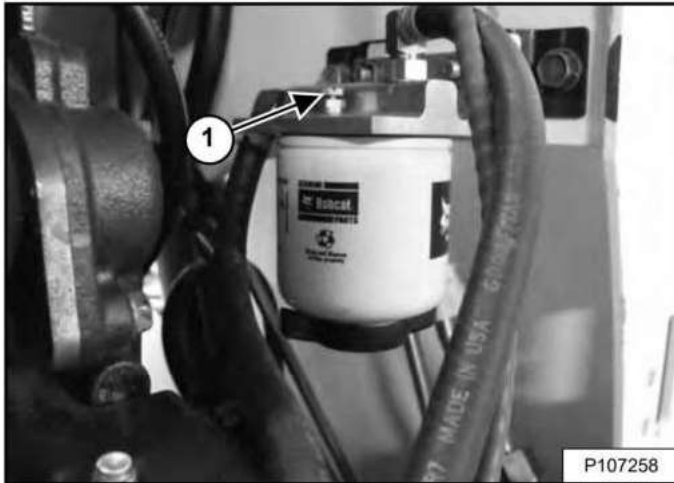
WARNING

AVOID INJURY OR DEATH

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

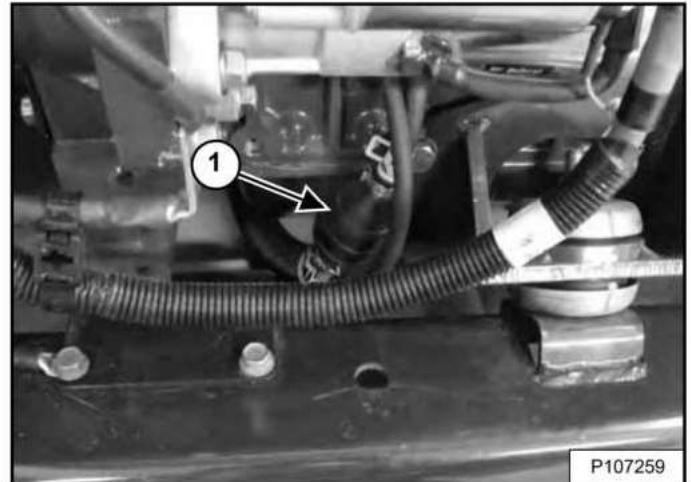
W-2072-EN-0909

Figure 203



Open the air vent plug (Item 1) [Figure 203] on the fuel filter base.

Figure 204



Squeeze the hand pump (priming bulb) (Item 1) [Figure 204] until fuel flows from the vent with no air bubbles.

Close the vent (Item 1) [Figure 203].

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.

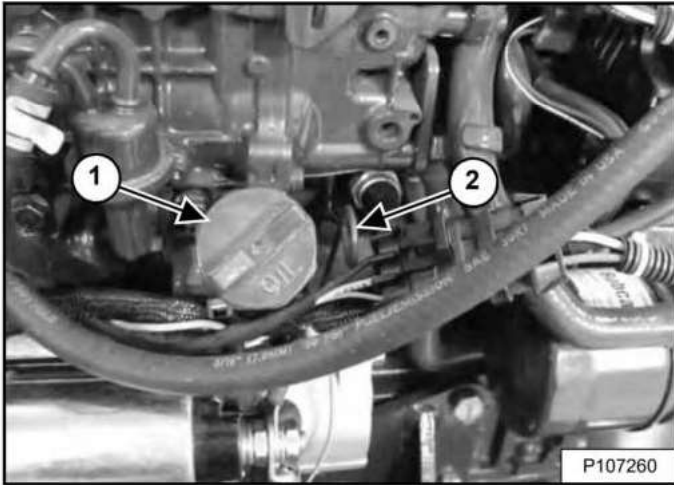
W-2103-0508

ENGINE LUBRICATION SYSTEM

Checking And Adding Engine Oil

Check the engine oil level every day before starting the engine for the work shift.

Figure 205



Park the loader on a level surface. Stop the engine. Open the rear door and remove the dipstick (Item 2) [Figure 205].

Keep the oil level between the marks on the dipstick. Do not overfill.

Remove the oil fill cap (Item 1) [Figure 205] to add engine oil.

WARNING

AVOID INJURY OR DEATH

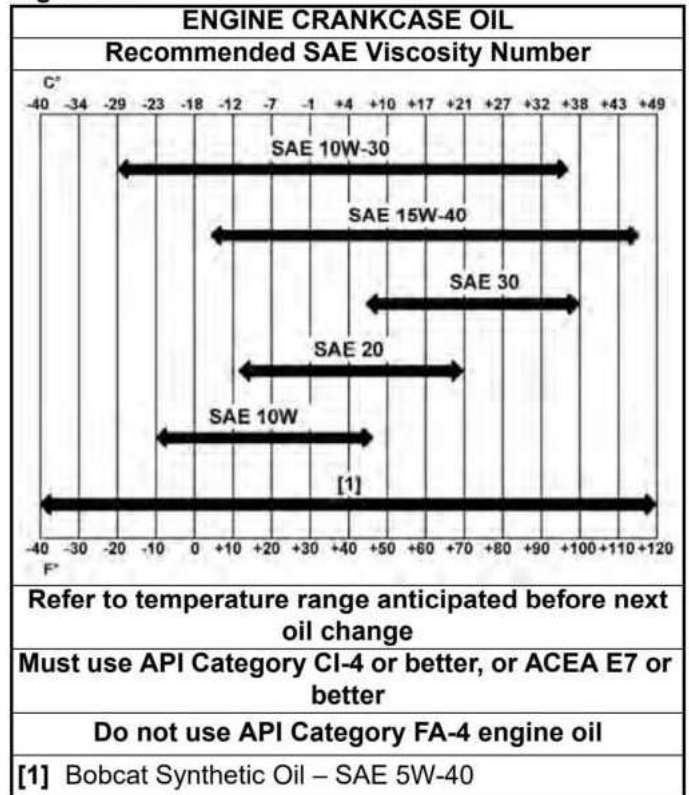
Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire.

W-2103-0508

Close the rear door.

Engine Oil Chart

Figure 206



Bobcat engine oils are recommended for use in this machine. If Bobcat engine oil is not available, use a good quality engine oil that meets API Service Category of CI-4 or better, or ACEA E7 or better [Figure 206].

IMPORTANT

AVOID ENGINE DAMAGE

Use of API Service Category FA-4 engine oil is not approved and may cause irreversible damage to the engine.

I-2384-0916

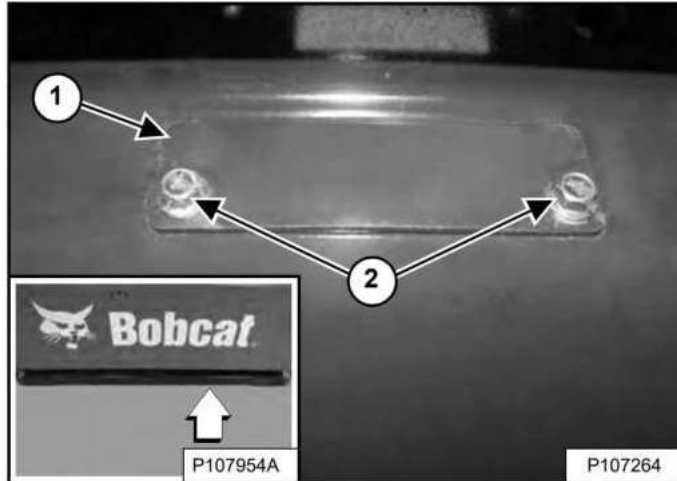
ENGINE LUBRICATION SYSTEM (CONT'D)

Removing And Replacing Oil And Filter

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 122.)

Operate the engine until coolant reaches normal operating temperature. Stop the engine.

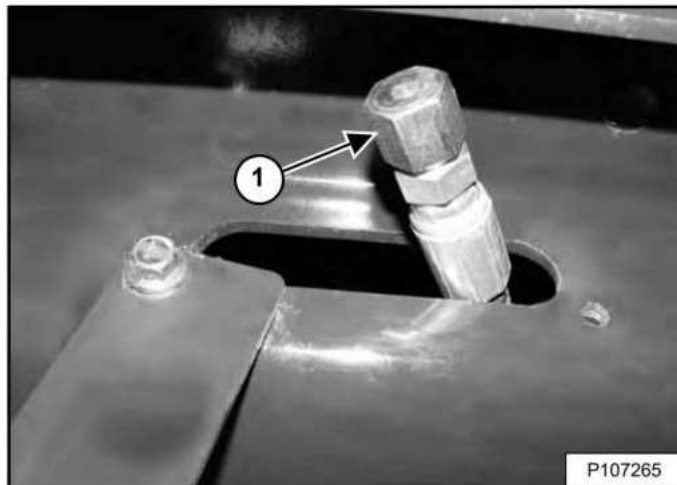
Figure 207



The oil drain hose is located behind a cover (Item 1) under the rear of the loader (Inset) [Figure 207].

Loosen one cover mounting bolt and remove the other bolt (Item 2) [Figure 207] to allow the cover to swing open.

Figure 208

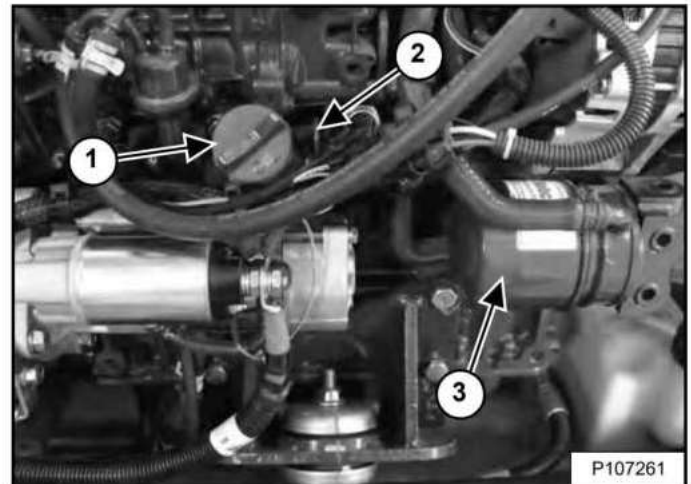


Remove the oil drain cap (Item 1) [Figure 208] from the oil drain hose and drain the oil into a container. Recycle or dispose of used oil in an environmentally safe manner.

Install and tighten the oil drain cap [Figure 208].

Install the cover and the cover mounting bolts [Figure 207]. Tighten both bolts.

Figure 209



Open the rear door, remove the oil filter (Item 3) [Figure 209], and clean the filter base.

Put clean oil on the new filter gasket, install the new filter, and hand tighten. Use genuine Bobcat filter only.

Remove the oil fill cap (Item 1) [Figure 209].

Put oil in the engine and replace the fill cap. (See Capacities on Page 206.) Do not overfill.

Start the engine and allow to operate for several minutes. Stop the engine and check for leaks at the filter.

Remove the dipstick (Item 2) [Figure 209] and check the oil level.

Add oil as needed if oil level is not at the top mark on the dipstick. Install the dipstick and close the rear door.

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.

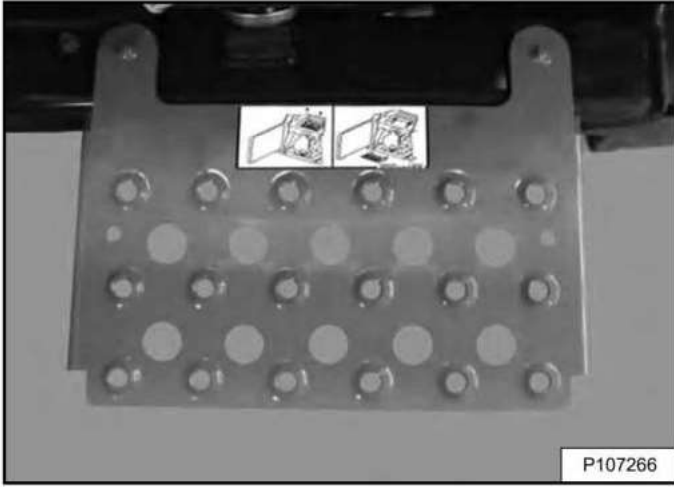
W-2103-0508

ENGINE COOLING SYSTEM

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

Maintenance Platform

Figure 210

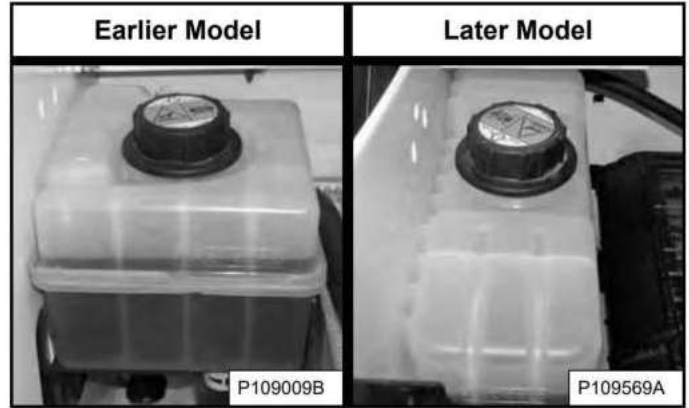


A maintenance platform [Figure 210] is available from your Bobcat dealer to facilitate access when cleaning the engine cooling system.

Cooling System Identification

NOTE: Identification of the cooling system used on your machine is necessary to perform the correct cleaning procedure.

Figure 211



Earlier models have a square coolant tank. Later models have a rectangular coolant tank [Figure 211].

ENGINE COOLING SYSTEM (CONT'D)

Cleaning (Earlier Models)

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 122.)

Stop the engine, open the rear door, and remove the rear grille. (See REAR GRILLE on Page 138.)



WARNING

AVOID INJURY OR DEATH

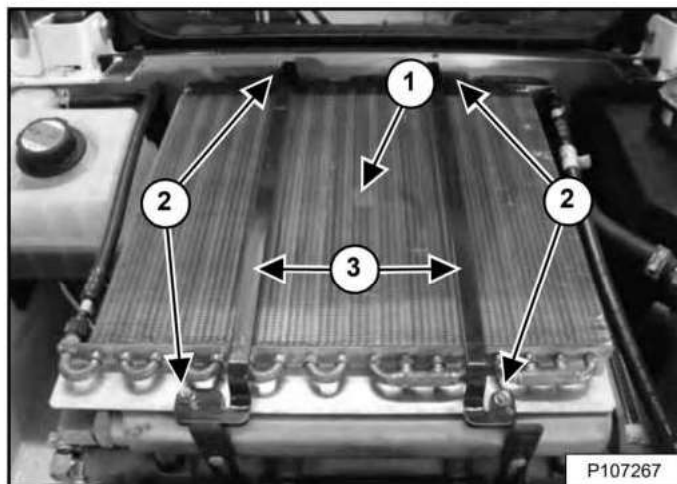
Wear safety glasses to prevent eye injury when any of the following conditions exist:

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

W-2019-0907

Loaders With Air Conditioning

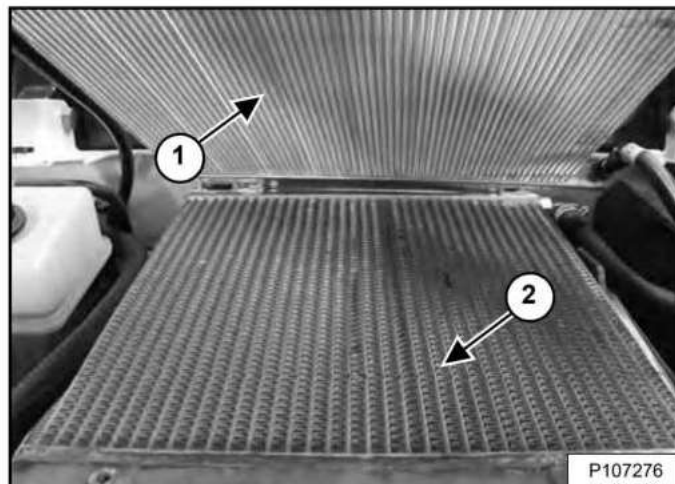
Figure 212



Use low air pressure or water pressure to clean the top of the air conditioning condenser (Item 1) [Figure 212].

The area between the air conditioning condenser and the hydraulic fluid cooler will require occasional cleaning. Remove the bolts (Item 2) and the brackets (Item 3) [Figure 212].

Figure 213



NOTE: Be careful when raising and lowering the air conditioning condenser so that the air conditioning condenser does not fall on the hydraulic fluid cooler and damage the fins.

Raise the air conditioning condenser (Item 1) and use low air pressure or water pressure to clean the top of the hydraulic fluid cooler (Item 2) [Figure 213].

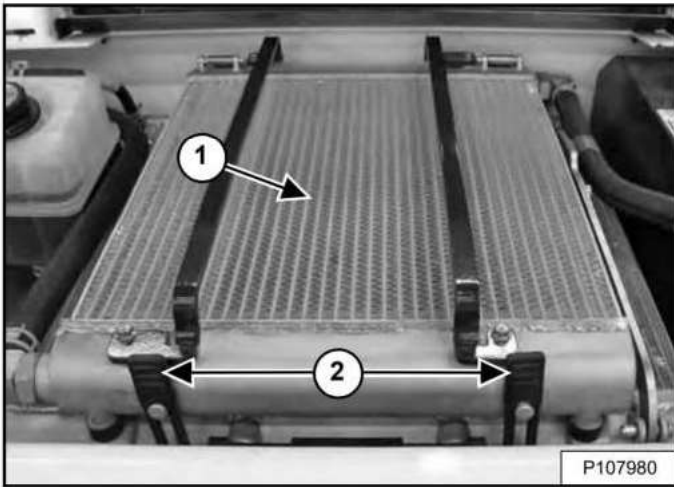
Lower the air conditioning condenser. Install the brackets and the bolts [Figure 212].

ENGINE COOLING SYSTEM (CONT'D)

Cleaning (Earlier Models) (Cont'd)

Loaders Without Air Conditioning

Figure 214

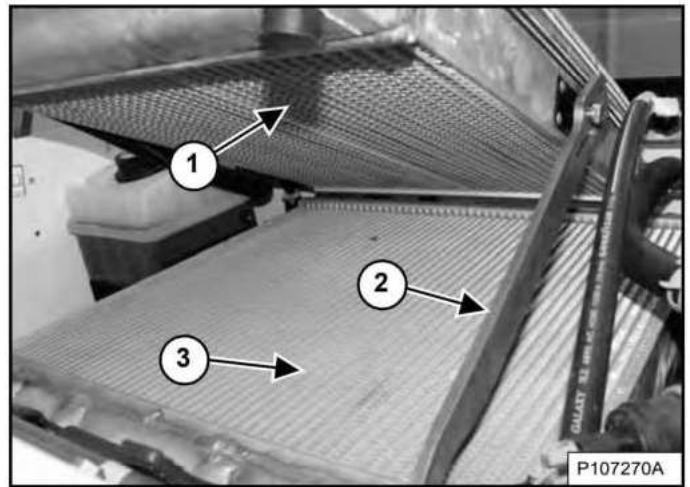


Use low air pressure or water pressure to clean the top of the hydraulic fluid cooler (Item 1) [Figure 214].

All Loaders

Unhook the two rubber straps (Item 2) [Figure 214].

Figure 215



Raise the hydraulic fluid cooler (Item 1) until the support bar (Item 2) drops into position to support the hydraulic fluid cooler. Use low air pressure or water pressure to clean the top of the radiator (Item 3) [Figure 215].

Raise the support bar (Item 2) [Figure 215] slightly and lower the hydraulic fluid cooler.

Fasten the two rubber straps [Figure 214].

Check the cooling system for leaks.

Install the rear grille and close the rear door.

ENGINE COOLING SYSTEM (CONT'D)

Cleaning (Later Models)

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 122.)

Stop the engine, open the rear door, and remove the rear grille. (See REAR GRILLE on Page 138.)



AVOID INJURY OR DEATH

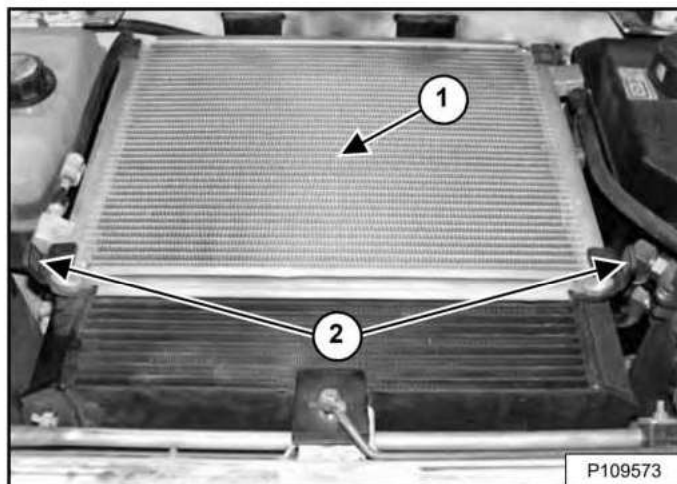
Wear safety glasses to prevent eye injury when any of the following conditions exist:

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

W-2019-0907

Loaders With Air Conditioning

Figure 216

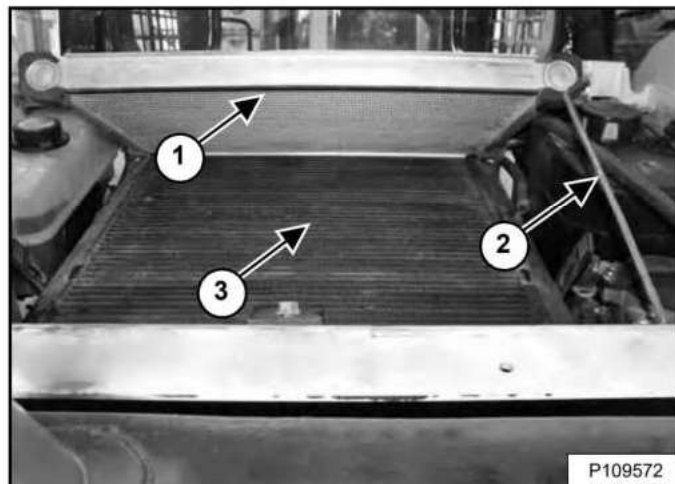


Use low air pressure or water pressure to clean the top of the air conditioning condenser (Item 1) [Figure 216].

Unhook the two rubber straps (Item 2) [Figure 216].

NOTE: The air conditioning condenser fits into two slotted brackets mounted on the hydraulic fluid cooler and radiator assembly. Ensure the air conditioning condenser remains connected to the brackets when raising and lowering.

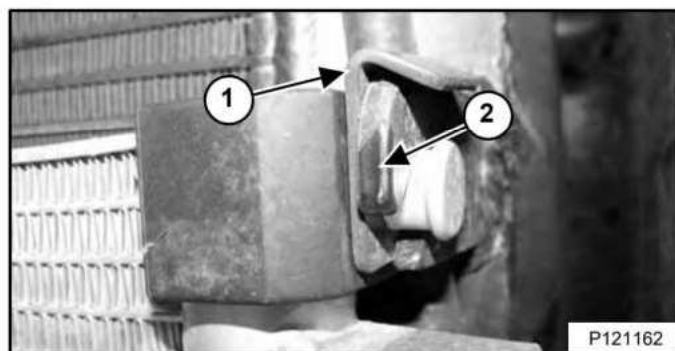
Figure 217



Raise the air conditioning condenser (Item 1) and rotate the support bar (Item 2) into position. Use low air pressure or water pressure to clean the top of the hydraulic fluid cooler and radiator assembly (Item 3) [Figure 217].

Return the support bar to storage position and lower the air conditioning condenser.

Figure 218



Ensure the air conditioning condenser is installed into the two slotted brackets [Figure 218]. (Right side shown.)

Ensure the clips (Item 1) are properly installed over the two slotted brackets (Item 2) [Figure 218]. (Right side shown.)

Fasten the two rubber straps [Figure 216].

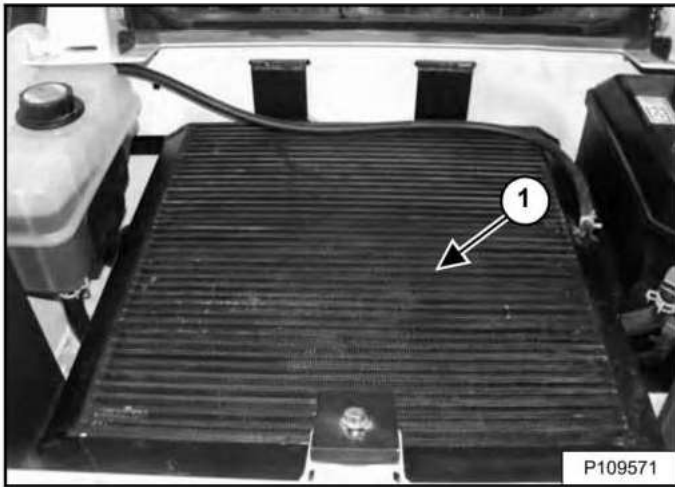
NOTE: The air conditioning condenser can be lifted out of the two slotted brackets by removing the clips. This allows greater access to clean the hydraulic fluid cooler and radiator assembly.

ENGINE COOLING SYSTEM (CONT'D)

Cleaning (Later Models) (Cont'd)

Loaders Without Air Conditioning

Figure 219



Use low air pressure or water pressure to clean the top of the hydraulic fluid cooler and radiator assembly (Item 1) [Figure 219].

All Loaders

Check the cooling system for leaks.

Install the rear grille and close the rear door.

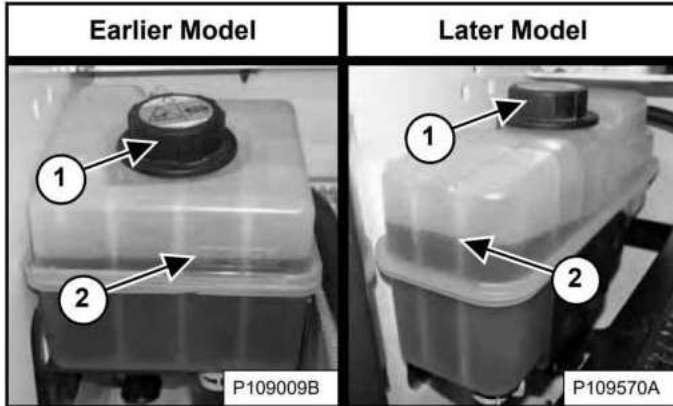
ENGINE COOLING SYSTEM (CONT'D)

Checking And Adding Coolant

Check the engine coolant level every day before starting the engine for the work shift.

Stop the engine, open the rear door, and remove the rear grille. (See REAR GRILLE on Page 138.)

Figure 220



Coolant must be between the top and bottom level markers (Item 2) [Figure 220] when the engine is cold.

NOTE: The loader is factory filled with propylene glycol coolant (purple colour). DO NOT mix propylene glycol with ethylene glycol.

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



AVOID INJURY

Stop the engine and allow to cool before adding coolant or you can be burned.

W-2106-0907

Remove the coolant fill cap (Item 1) [Figure 220] to add coolant.

The correct mixture of coolant to provide a -37°C (-34°F) freeze protection is 5 L propylene glycol mixed with 4,4 L of water **OR** 1 U.S. gal propylene glycol mixed with 3.5 qt of water.

IMPORTANT

AVOID ENGINE DAMAGE

Always use the correct ratio of water to antifreeze.

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

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

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

I-2124-0497

Add premixed coolant, 47% water and 53% propylene glycol to the coolant tank until the coolant level reaches the upper level marker on the tank [Figure 220].

Install the coolant fill cap [Figure 220].

NOTE: The coolant fill cap must be tightened until the cap clicks.

Install the rear grille and close the rear door.

ENGINE COOLING SYSTEM (CONT'D)

Removing And Replacing Coolant

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 122.)

Stop the engine, open the rear door, and remove the rear grille. (See REAR GRILLE on Page 138.)

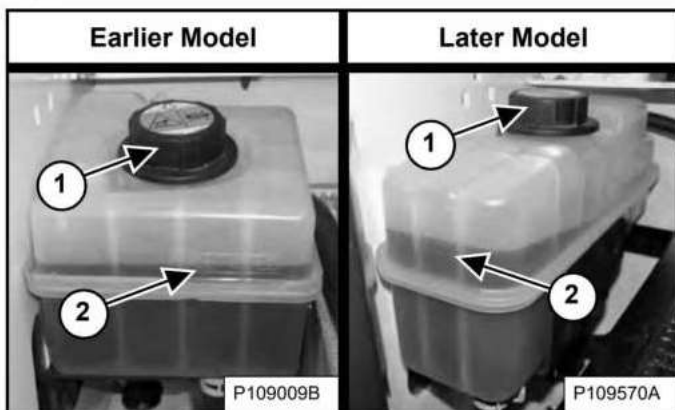
! WARNING

AVOID INJURY

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

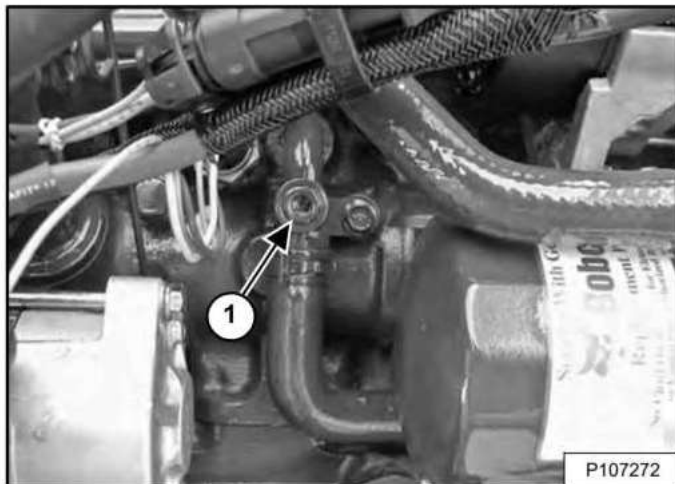
W-2607-0804

Figure 221



Remove the coolant fill cap (Item 1) [Figure 221].

Figure 222



Remove the coolant drain plug (Item 1) [Figure 222] located to the left of the oil filter. Drain the coolant into a container. Install and tighten the plug.

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

Mix new coolant in a separate container. (See Capacities on Page 206.)

The correct mixture of coolant to provide a -37°C (-34°F) freeze protection is 5 L propylene glycol mixed with 4,4 L of water **OR** 1 U.S. gal propylene glycol mixed with 3.5 qt of water.

IMPORTANT

AVOID ENGINE DAMAGE

Always use the correct ratio of water to antifreeze.

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

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

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

I-2124-0497

Add premixed coolant, 47% water and 53% propylene glycol to the coolant tank until the coolant level reaches the lower level marker on the tank (Item 2) [Figure 221].

Install the coolant fill cap [Figure 221].

NOTE: The coolant fill cap must be tightened until the cap clicks.

Install the rear grille and close the rear door.

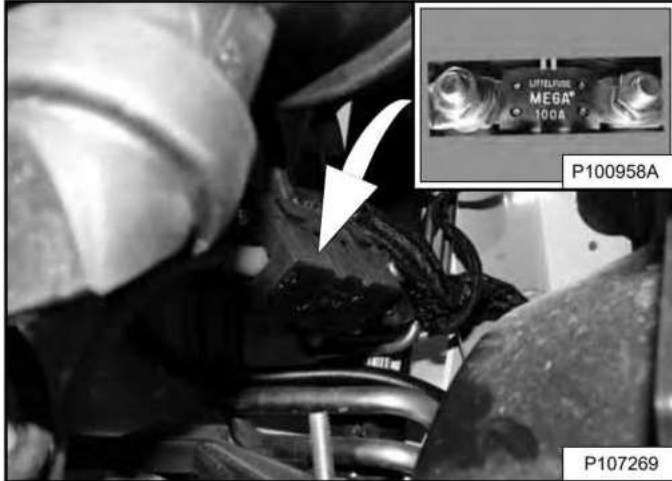
Operate the engine until coolant reaches normal operating temperature. Stop the engine.

Check the coolant level when cool. Add coolant as needed. (See Checking And Adding Coolant on Page 155.)

ELECTRICAL SYSTEM

Description

Figure 223



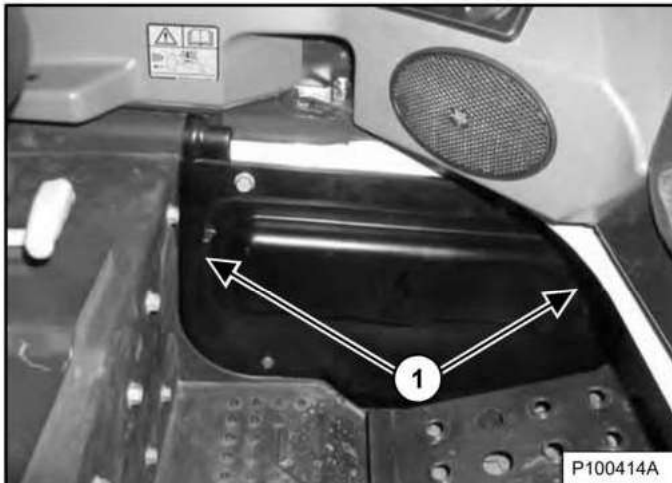
The loader has a 12 volt, negative earth, alternator charging system.

The electrical system is protected by fuses located in the operator cab and a 100 ampere master fuse (Inset) [Figure 223] located above the battery in the engine compartment.

The fuses will protect the electrical system when there is an electrical overload. The reason for the overload must be found before starting the engine again.

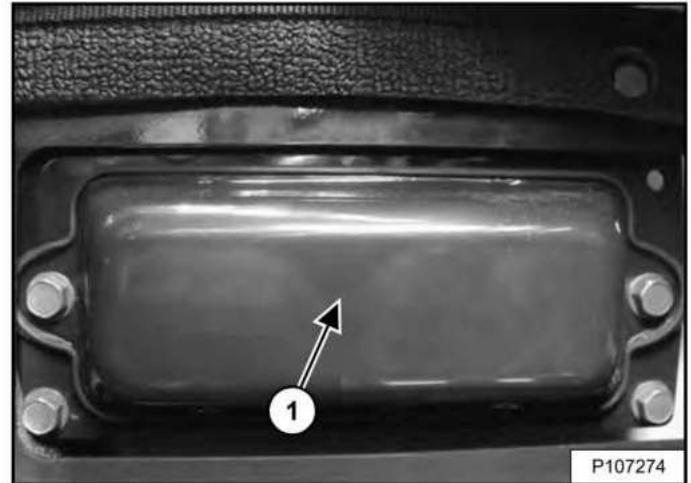
Fuse And Relay Location / Identification

Figure 224



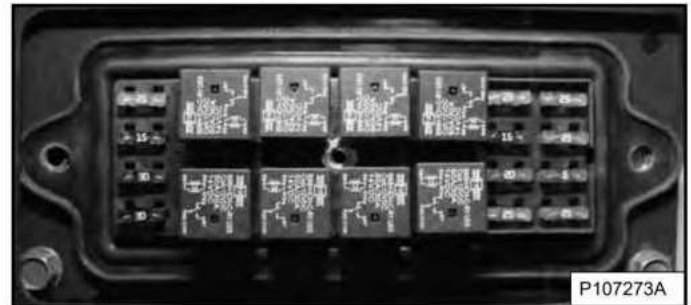
The fuse / relay panel is located behind an access panel near the left foot pedal / footrest. Pull the panel at each end (Item 1) [Figure 224] to remove.

Figure 225



The electrical system is protected from overload by fuses located under the fuse panel cover (Item 1) [Figure 225].

Figure 226



Remove the fuse panel cover to check or replace the fuses and relays [Figure 226].

A decal located inside the access panel indicates fuse / relay location and fuse amperage ratings.

Install the fuse panel cover [Figure 225].

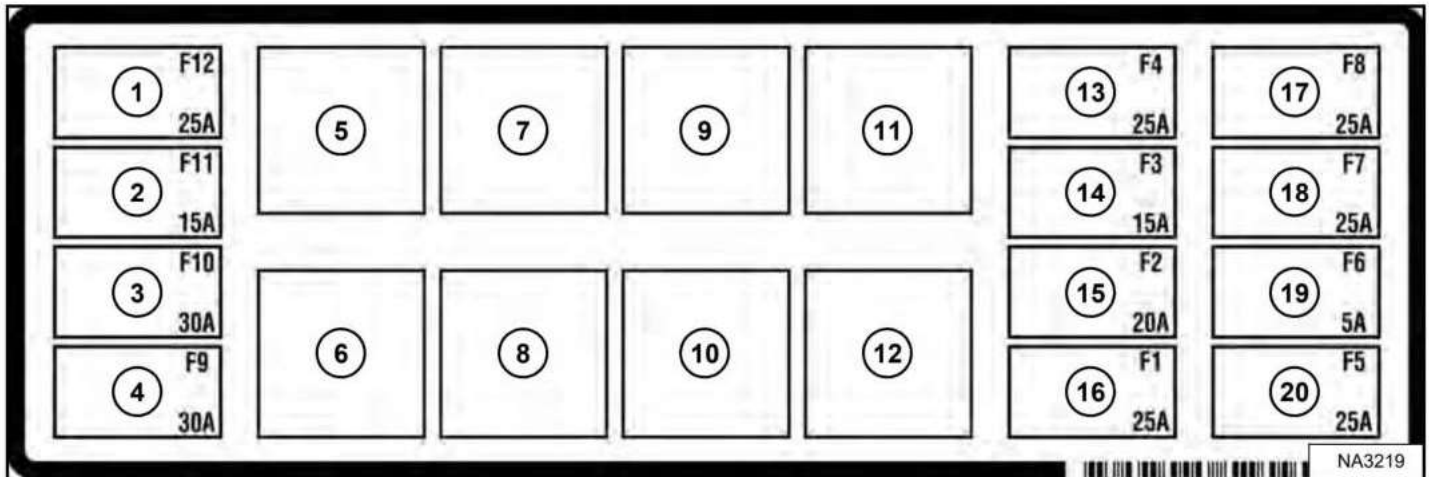
Line up the clips on the access panel with the slots provided and push the panel into position [Figure 224]. A locating pin helps align the panel during installation.

A table is provided with details on amperage ratings and the circuits affected by each fuse and relay. (See Figure 227 on Page 158.) or (See Figure 228 on Page 159.)

ELECTRICAL SYSTEM (CONT'D)

Fuse And Relay Location / Identification (Cont'd)

Figure 227



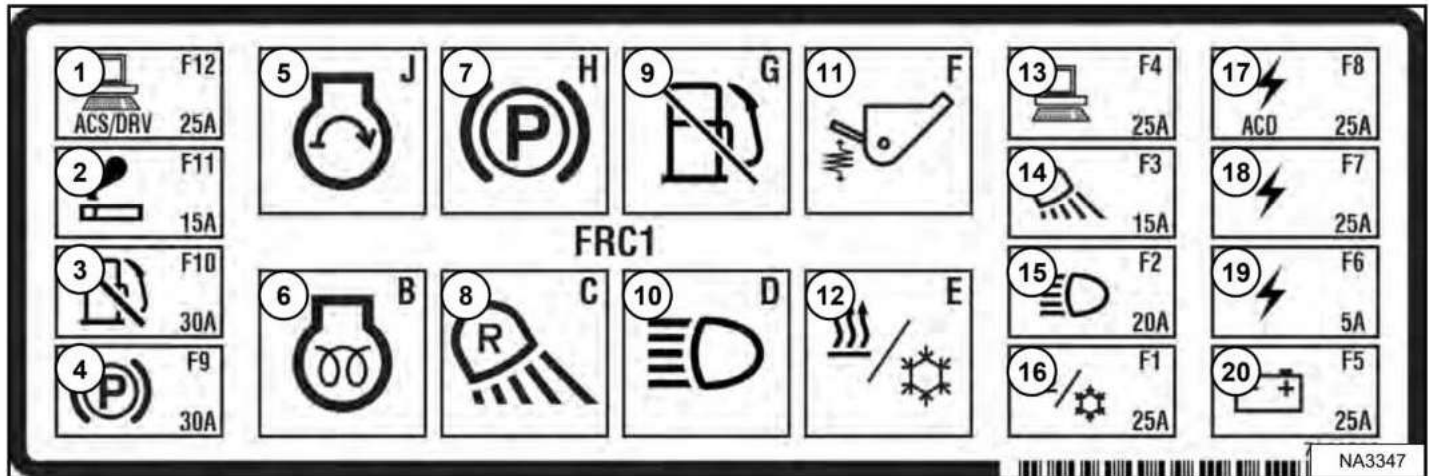
The table below is for models with decal part number 7223425. Fuse location and amperage ratings are shown in the table below and on the decal [Figure 227]. Relays are identified by the letter “R” in the AMP column.

REF	ICON	DESCRIPTION	AMP	REF	ICON	DESCRIPTION	AMP	REF	ICON	DESCRIPTION	AMP
1		ACS / Drive Controllers	25	8		Rear Lights	R	15		Front Lights	20
2		Power Port	15	9		Fuel Shutoff	R	16		Heater / HVAC	25
3		Fuel Shutoff	30	10		Front Lights	R	17		Switched Power and ACD	25
4		Traction	30	11		Switched Power	R	18		Switched Power and Back-up Alarm	25
5		Starter	R	12		Heater / HVAC	R	19		Switched Power	5
6		Glow Plugs	R	13		Gateway / Auxiliary Controllers	25	20		Accessories and Front Horn	25
7		Traction	R	14		Rear Lights	15				

Dealer Conv -- Not for Resale

Fuse And Relay Location / Identification (Cont'd)

Figure 228



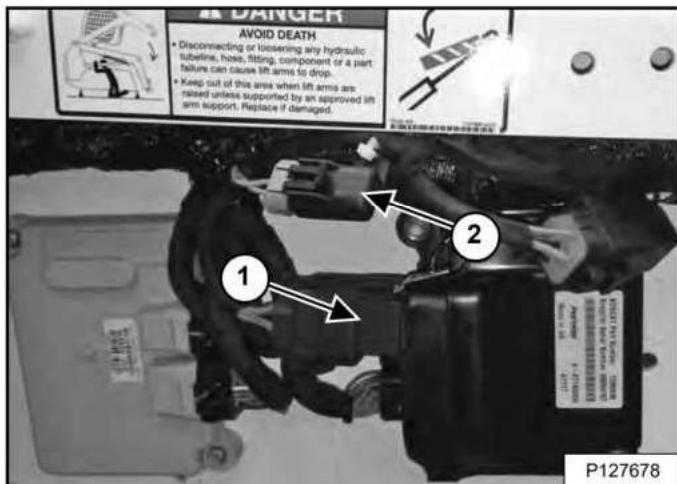
The table below is for models with decal part number 7323562. The location and amperage ratings are shown in the table below and on the decal [Figure 228]. Relays are identified by the letter “R” in the AMP column.

REF	ICON	DESCRIPTION	AMP	REF	ICON	DESCRIPTION	AMP	REF	ICON	DESCRIPTION	AMP
1		ACS / Drive Controllers	25	8		Rear Lights	R	15		Front Lights	20
2		Power Port	15	9		Fuel Shutoff	R	16		Heater / HVAC	25
3		Fuel Shutoff	30	10		Front Lights	R	17		Switched Power and ACD	25
4		Traction	30	11		Automatic Ride Control	R	18		Switched Power and Back-up Alarm	25
5		Starter	R	12		Heater / HVAC	R	19		Switched Power	5
6		Glow Plugs	R	13		Gateway / Auxiliary Controllers	25	20		Accessories and Front Horn	25
7		Traction	R	14		Rear Lights	15				

Dealer Conv -- Not for Resale

Fuse And Relay Location / Identification (Cont'd)

Figure 229



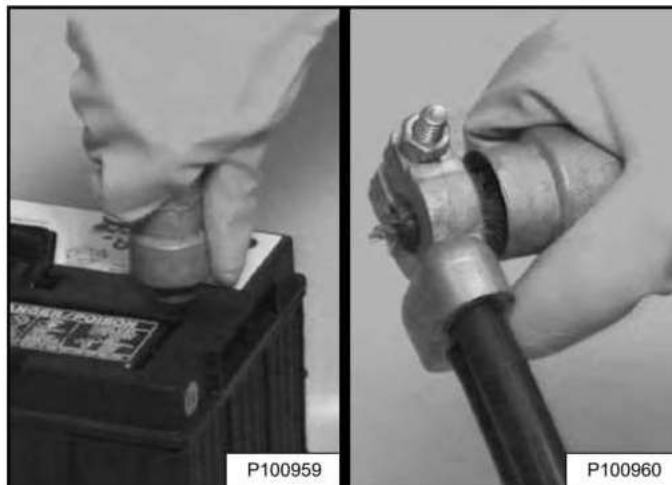
A relay (Item 1) [Figure 229] for the heated seat is located under the operator cab on the left side of the loader. The relay is normally located above the harness. Stop the engine and raise the operator cab to access the relay. (See Raising on Page 135.)

A 25 ampere fuse (Item 2) [Figure 229] for the heated seat is located under the operator cab on the left side of the loader. The fuse is normally located above the harness. Stop the engine and raise the operator cab to access the fuse. (See Raising on Page 135.)

Battery Maintenance

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 122.)

Figure 230



The battery cables must be clean [Figure 230] and tight.

Remove acid or corrosion from battery and cables with sodium bicarbonate (baking soda) and water solution.

Put Bobcat Battery Saver or grease on the battery terminals and cable ends to prevent corrosion.

Check electrolyte level in the battery. Add distilled water as needed.

WARNING

AVOID INJURY OR DEATH

Batteries contain acid which burns eyes and skin on contact. Wear goggles, protective clothing and rubber gloves to keep acid off body.

In case of acid contact, wash immediately with water. In case of eye contact get prompt medical attention and wash eye with clean, cool water for at least 15 minutes.

If electrolyte is taken internally drink large quantities of water or milk! DO NOT induce vomiting. Get prompt medical attention.

W-2065-0807

Using A Booster Battery (Jump Starting)

If the engine will not start without using a booster battery, BE CAREFUL! There must be one person in the operator's seat and one person to connect and disconnect the battery cables.

The key switch must be in the STOP position. The booster battery must be 12 volt.



**BATTERY GAS CAN EXPLODE AND CAUSE
SERIOUS INJURY OR DEATH**

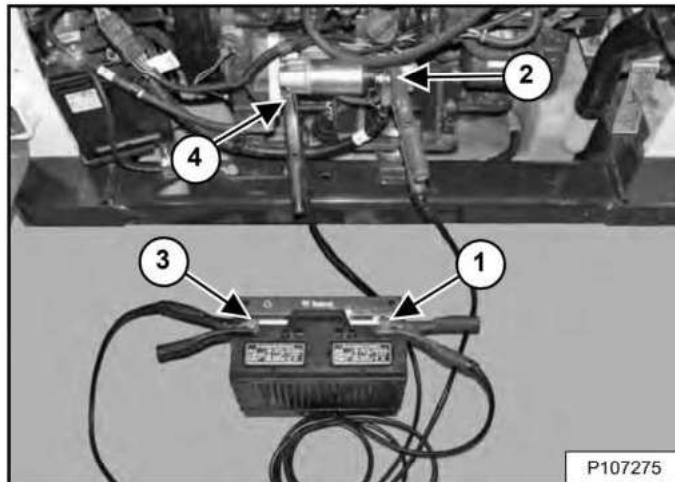
Keep arcs, sparks, flames and lighted tobacco away from batteries. When *jumping* from booster battery make final connection (negative) at machine frame.

Do not jump start or charge a frozen or damaged battery. Warm battery to 16°C (60°F) before connecting to a charger. Unplug charger before connecting or disconnecting cables to battery. Never lean over battery while boosting, testing or charging.

W-2066-0910

Open the rear door.

Figure 231



Connect the end of the first cable (Item 1) to the positive (+) terminal of the booster battery. Connect the other end of the same cable (Item 2) [Figure 231] to the positive (+) terminal on the engine starter.

Connect the end of the second cable (Item 3) to the negative (-) terminal of the booster battery. Connect the other end of the same cable (Item 4) [Figure 231] to the engine.

Keep cables away from moving parts. Start the engine. (See STARTING THE ENGINE on Page 96.)

After the engine has started, remove the negative (-) cable (Item 4) first. Remove the cable from the positive (+) terminal (Item 2) [Figure 231].

Remove the cables from the booster battery.

Close the rear door.



Damage to the alternator can occur if:

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

I-2023-1285

Removing And Installing Battery

! WARNING

AVOID INJURY OR DEATH

Batteries contain acid which burns eyes and skin on contact. Wear goggles, protective clothing and rubber gloves to keep acid off body.

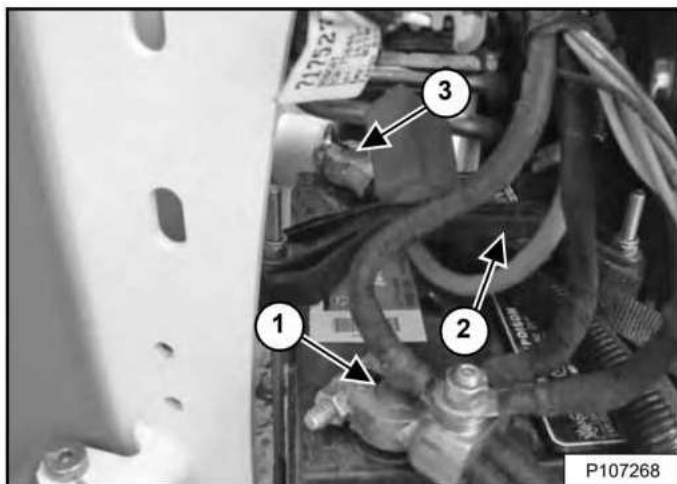
In case of acid contact, wash immediately with water. In case of eye contact get prompt medical attention and wash eye with clean, cool water for at least 15 minutes.

If electrolyte is taken internally drink large quantities of water or milk! DO NOT induce vomiting. Get prompt medical attention.

W-2065-0807

Stop the engine and open the rear door.

Figure 232



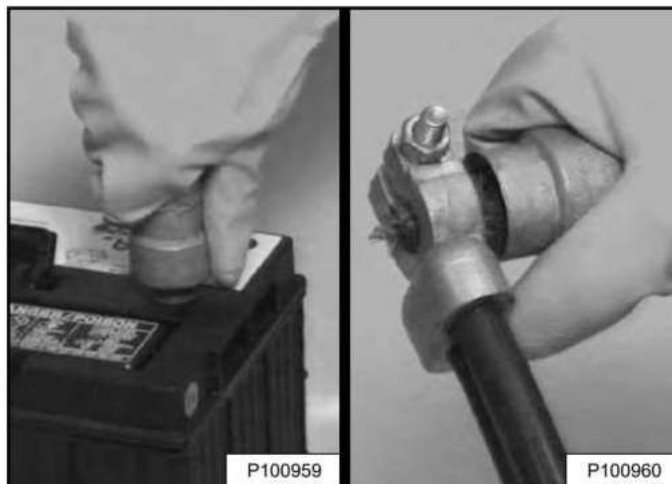
Disconnect the negative (-) cable (Item 1) [Figure 232].

Remove the battery hold-down clamp (Item 2) [Figure 232].

Disconnect the positive (+) cable (Item 3) [Figure 232] from the battery.

Remove the battery from the loader.

Figure 233



Always clean the battery terminals and cable ends when installing a new or used battery [Figure 233].

When installing the battery in the loader, do not touch any metal parts with the battery terminals.

Connect the negative (-) cable last to prevent sparks.

Connect and tighten the battery cables.

Install and tighten the battery hold-down clamp.

Put Bobcat Battery Saver or grease on the battery terminals and cable ends to prevent corrosion.

Close the rear door.

! WARNING

BATTERY GAS CAN EXPLODE AND CAUSE SERIOUS INJURY OR DEATH

Keep arcs, sparks, flames and lighted tobacco away from batteries. When *jumping* from booster battery make final connection (negative) at machine frame.

Do not jump start or charge a frozen or damaged battery. Warm battery to 16°C (60°F) before connecting to a charger. Unplug charger before connecting or disconnecting cables to battery. Never lean over battery while boosting, testing or charging.

W-2066-0910

HYDRAULIC / HYDROSTATIC SYSTEM

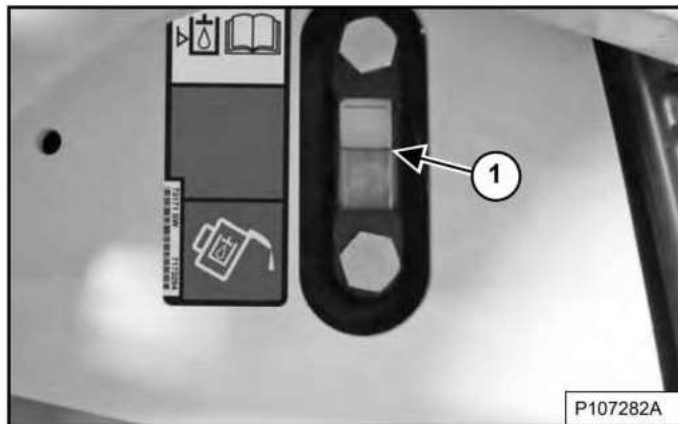
Checking And Adding Fluid

Check the hydraulic / hydrostatic fluid level every day before starting the work shift.

Park the loader on a level surface, lower the lift arms, and put the attachment flat on the ground or tilt the Bob-Tach fully back if no attachment is installed.

Stop the engine.

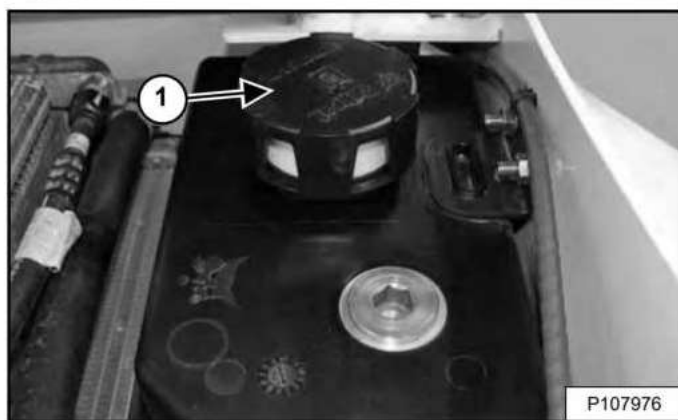
Figure 234



Check the fluid level in the sight gauge (Item 1) [Figure 234]. Keep the fluid level within the operating range.

Open the rear door and remove the rear grille. (See REAR GRILLE on Page 138.)

Figure 235



Remove the fill cap (Item 1) [Figure 235].

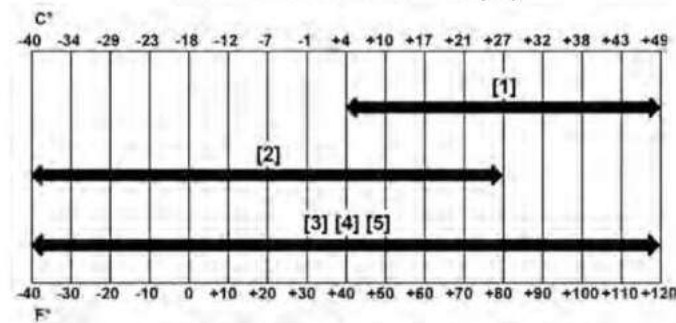
Add fluid as needed to bring the level within the operating range in the sight gauge [Figure 234].

Install the fill cap [Figure 235], install the rear grille, and close the rear door.

Hydraulic / Hydrostatic Fluid Chart

Figure 236

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 236].



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

Removing And Replacing Hydraulic Fluid

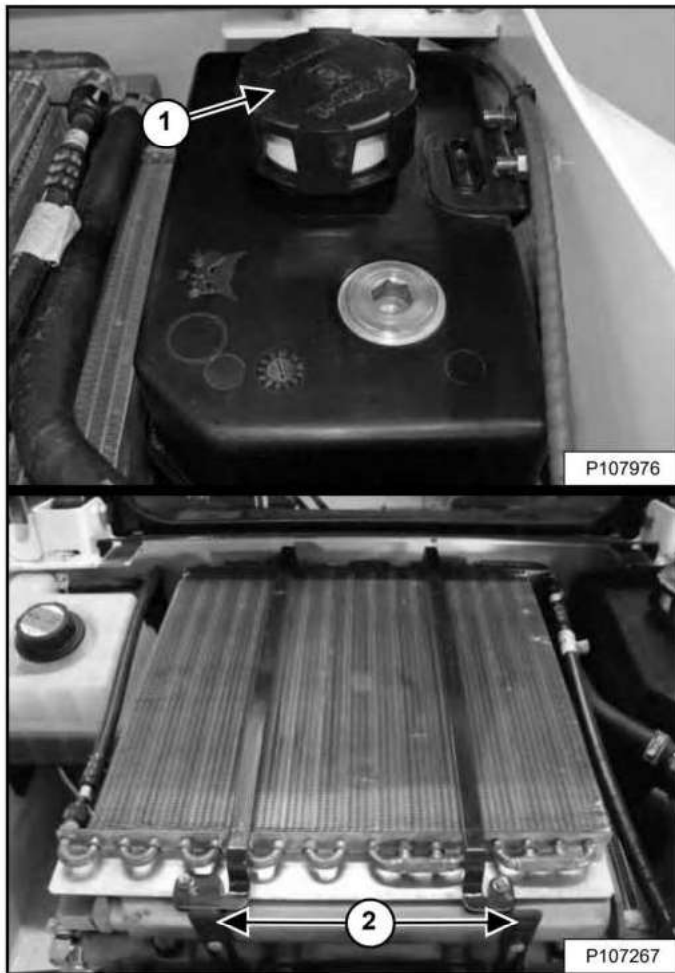
See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 122.)

Replace the fluid if contaminated or after major repair.

Always replace the hydraulic / hydrostatic filter and the hydraulic charge filter whenever the hydraulic fluid is replaced. (See Removing And Replacing Hydraulic / Hydrostatic Filter on Page 166.) and (See Removing And Replacing Hydraulic Charge Filter on Page 167.)

Stop the engine, open the rear door, and remove the rear grille. (See REAR GRILLE on Page 138.)

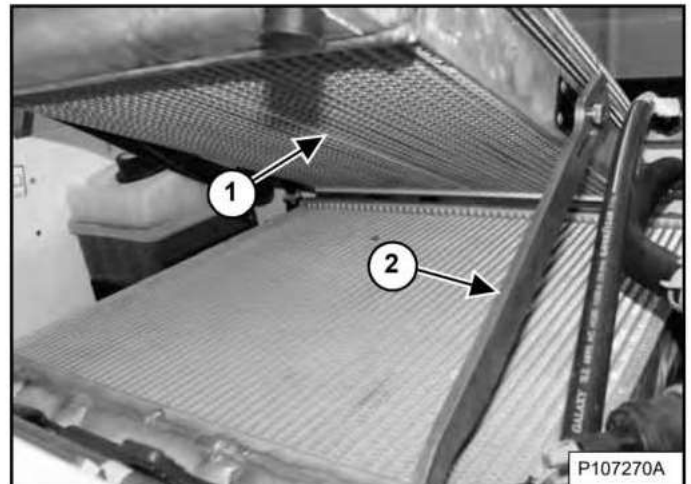
Figure 237



Remove the hydraulic fill cap (Item 1) [Figure 237].

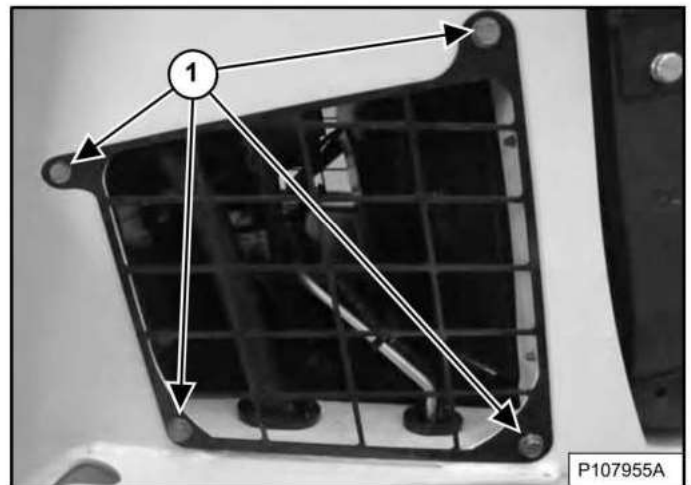
(Earlier Models with Square Coolant Tank) - Unhook the two rubber straps (Item 2) [Figure 237].

Figure 238



(Earlier Models with Square Coolant Tank) - Raise the hydraulic fluid cooler (Item 1) until the support bar (Item 2) [Figure 238] drops into position to support the hydraulic fluid cooler. This procedure will aid in draining the hydraulic fluid.

Figure 239



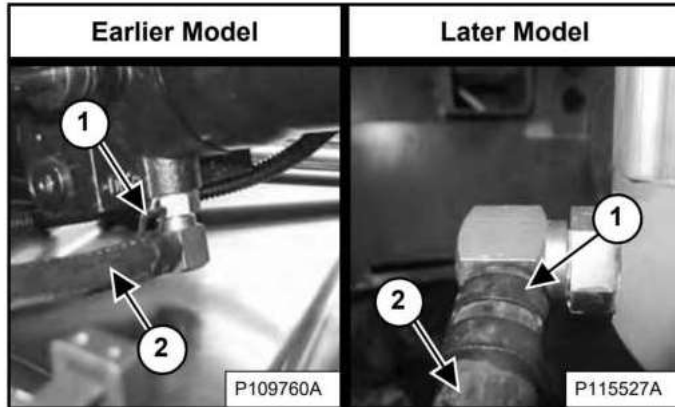
Remove the right side access cover bolts (Item 1) [Figure 239] and remove the access cover. (Lift arms shown raised for visual clarity.)

Dealer Conv. -- Not for Resale

Removing And Replacing Hydraulic Fluid (Cont'd)

NOTE: The hose used to drain the hydraulic reservoir is located under the fan motor on earlier models and on the right side of the fan motor on later models.

Figure 240



Remove the clamp (Item 1). Pinch off the hose (Item 2) [Figure 240] near the fitting and disconnect hose from the fitting. Route the hose out the side of the loader and drain the fluid into a container.

Connect the hose to the fitting when the fluid stops draining. Install the clamp.

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



AVOID INJURY OR DEATH

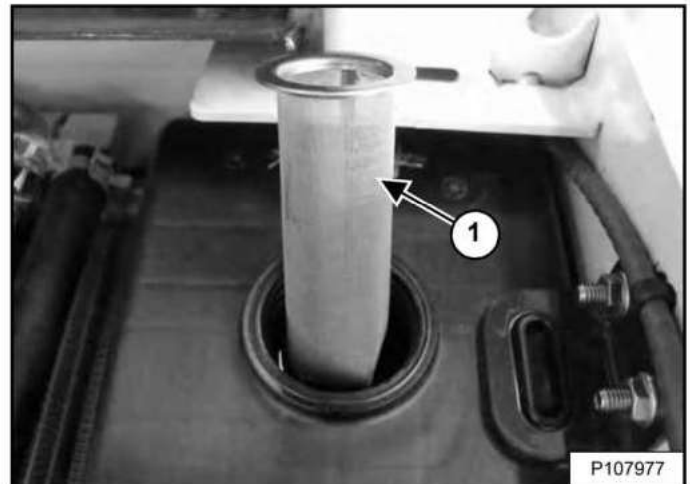
Always clean up spilled fuel or oil. Keep heat, flames, sparks or lighted tobacco away from fuel and oil. Failure to use care around combustibles can cause explosion or fire.

W-2103-0508

Install the side access cover and bolts [Figure 239].

(Earlier Models with Square Coolant Tank) - Raise the support bar supporting the hydraulic fluid cooler and lower the hydraulic fluid cooler. Fasten the two rubber straps [Figure 237].

Figure 241



Remove and clean the hydraulic fill screen (Item 1) [Figure 241]. Use low air pressure to dry the screen.

Install hydraulic fill screen and add the correct fluid to the reservoir until the fluid level is within the operating range of the sight gauge. (See Capacities on Page 206.) and (See Checking And Adding Fluid on Page 163.)

Install the hydraulic fill cap [Figure 237].

Install the rear grille and close the rear door.

Start the engine and operate the loader hydraulic controls.



AVOID INJURY OR DEATH

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

W-2072-EN-0909

Stop the engine and check for leaks.

Check the fluid level in the reservoir and add as needed. (See Checking And Adding Fluid on Page 163.)

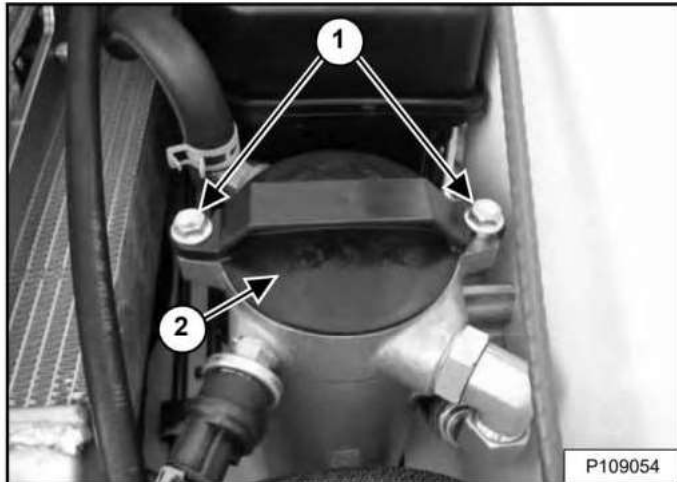
Removing And Replacing Hydraulic / Hydrostatic Filter

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 122.)

Stop the engine, open the rear door, and remove the rear grille. (See REAR GRILLE on Page 138.)

Clean the top of the filter housing.

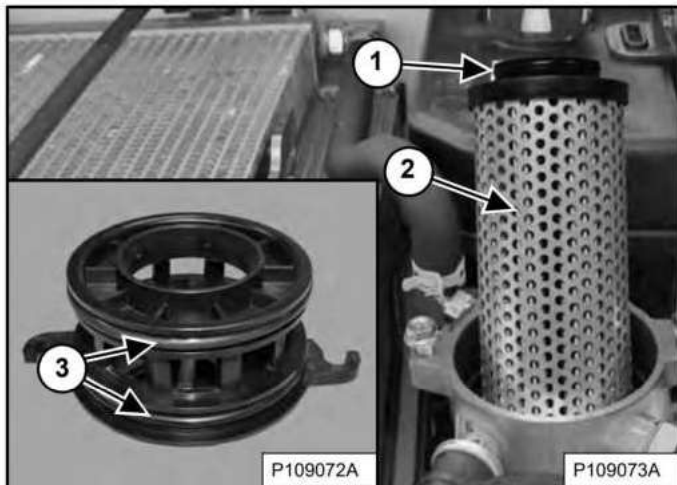
Figure 242



Loosen the bolts (Item 1) and rotate the filter cap (Item 2) [Figure 242] anticlockwise until the cap clears the bolts.

Slowly pry the filter cap off the housing by hand.

Figure 243



Remove the filter (Item 2) [Figure 243] and discard.

Lubricate the O-ring (Item 1) [Figure 243] on new filter with clean oil.

Install new filter ensuring that filter is fully seated in the housing.

Remove the filter cap O-rings (Item 3) [Figure 243] and discard.

Install new filter cap O-rings and lubricate with clean oil.

NOTE: The filter cap O-rings are not the same size. Take care to install each O-ring in the correct location.

Install the filter cap and rotate clockwise to engage the bolts [Figure 242]. Alternate tightening the bolts to draw the cap down evenly. Tighten the bolts to 27 - 41 N•m (20 - 30 ft-lb) torque.



AVOID INJURY OR DEATH

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

W-2103-0508

Install the rear grille and close the rear door.

Start the engine and operate the loader hydraulic controls.



AVOID INJURY OR DEATH

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

W-2072-EN-0909

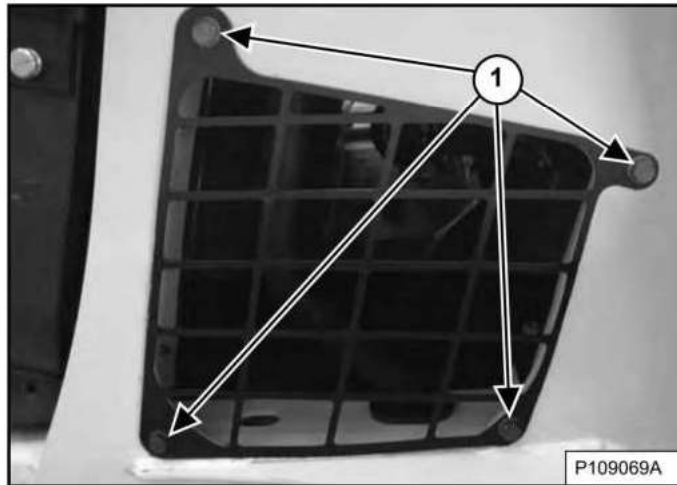
Stop the engine and check for leaks at the filter.

Check the fluid level in the reservoir and add as needed. (See Checking And Adding Fluid on Page 163.)

Removing And Replacing Hydraulic Charge Filter

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 122.)

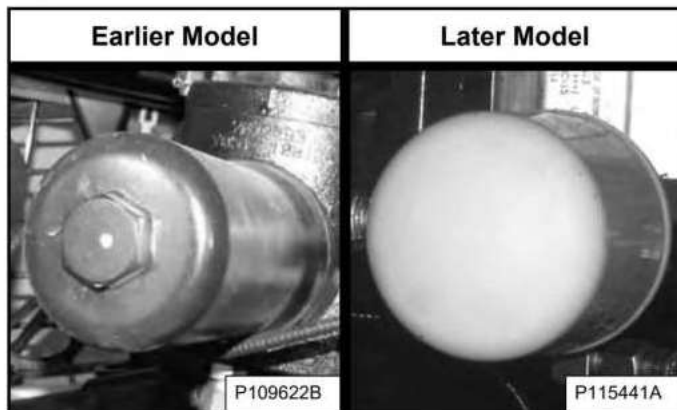
Figure 244



Remove the left side access cover bolts (Item 1) [Figure 244] and remove the access cover. (Lift arms shown raised for visual clarity.)

NOTE: Identification of the hydraulic charge filter used on your machine is necessary to perform the correct replacement procedure.

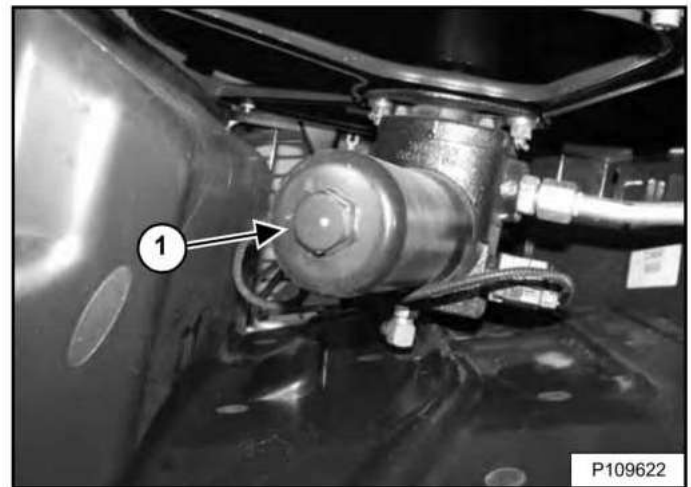
Figure 245



Earlier models use a separate filter housing and filter element. Later models use a spin-on filter [Figure 245].

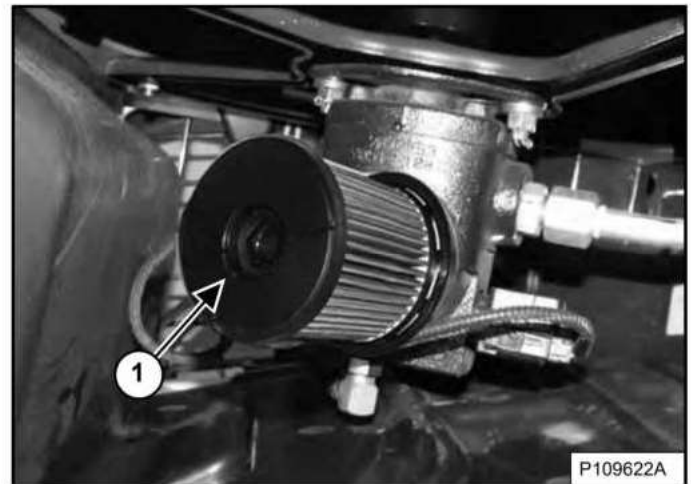
Earlier Models

Figure 246



Put a suitable container below the filter housing and remove the filter housing (Item 1) [Figure 246].

Figure 247



Remove the filter (Item 1) [Figure 247] and discard.

Clean the surface of the filter housing and the filter base where they contact the filter seal.

Put clean oil on the seal of the new filter. Install the filter on the filter base [Figure 247].

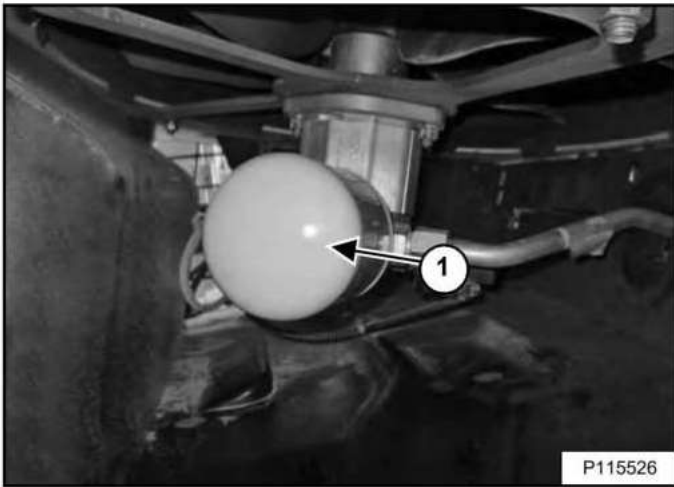
Install and tighten the filter housing to 65 - 70 N•m (48 - 52 ft-lb) torque [Figure 246].

Dealer Conv. -- Not for Resale

Removing And Replacing Hydraulic Charge Filter (Cont'd)

Later Models

Figure 248



Put a suitable container below the filter, remove the filter (Item 1) [Figure 248], and clean the filter base.

Put clean oil on the new filter gasket, install the new filter, and tighten the filter to 37 – 45 N•m (27 – 33 ft-lb) torque.

All Models

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

! WARNING

AVOID INJURY OR DEATH

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

W-2103-0508

Install the side access cover and bolts [Figure 244].

Start the engine and operate the loader hydraulic controls.

! WARNING

AVOID INJURY OR DEATH

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

W-2072-EN-0909

Stop the engine and check for leaks at the filter.

Check the fluid level in the reservoir and add as needed. (See Checking And Adding Fluid on Page 163.)

Dealer Copy -- Not for Resale

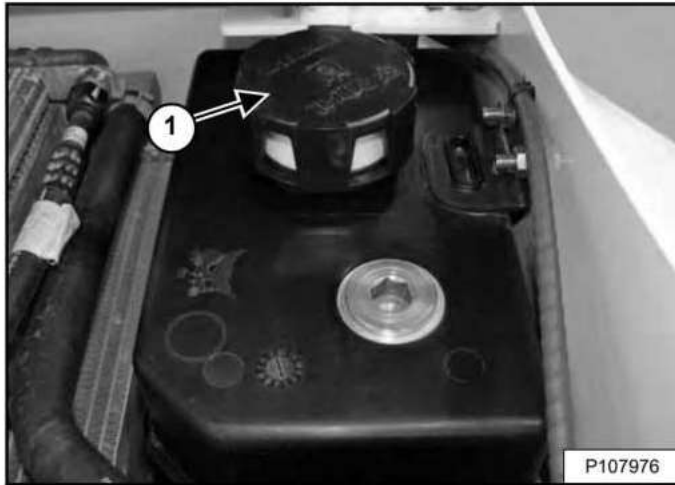
HYDRAULIC / HYDROSTATIC SYSTEM (CONT'D)

Replacing Reservoir Breather Cap

See the SERVICE SCHEDULE for the correct replacement interval. (See SERVICE SCHEDULE on Page 122.)

Stop the engine, open the rear door, and remove the rear grille. (See REAR GRILLE on Page 138.)

Figure 249



Remove the breather cap (Item 1) [Figure 249] and discard.

Install new breather cap.

Install the rear grille and close the rear door.

SPARK ARRESTER MUFFLER

Cleaning Procedure

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 122.)

Do not operate the loader with a defective exhaust system.

IMPORTANT

This machine is factory equipped with a spark arrester exhaust system that must be maintained for proper function.

- **WITH MUFFLER**

The muffler chamber must be emptied every 100 hours of operation to keep it in working condition.

- **WITH SELECTIVE CATALYST REDUCTION (SCR) AND / OR DIESEL OXIDATION CATALYST (DOC)**

Do not remove or modify the DOC or SCR.

The SCR must be maintained according to the instructions in the Operation & Maintenance Manual for proper function.

- **WITH DIESEL PARTICULATE FILTER (DPF)**

The DPF must be maintained according to the instructions in the Operation & Maintenance Manual for proper function.

(If this machine is operated on flammable forest, brush or grass cover land, a spark arrester attached to the exhaust system may be required and must be maintained in working order. Refer to local laws and regulations for spark arrester requirements.)

I-2350-EN-1114

Stop the engine and open the rear door.

! WARNING

AVOID INJURY OR DEATH

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

W-2050-0807

! WARNING

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

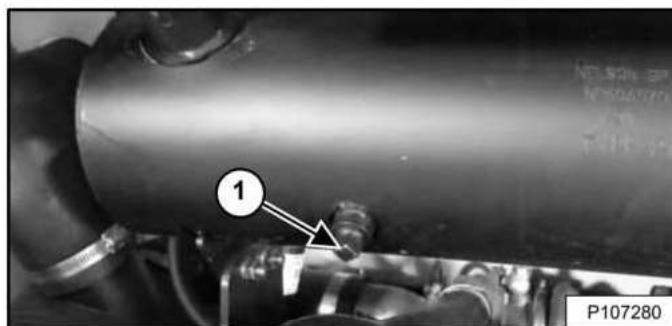
W-2068-1285

! WARNING

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

W-2011-1285

Figure 250



Remove the plug (Item 1) [Figure 250] from the muffler.

! WARNING

When the engine is running during service, the driving and steering controls must be in neutral and the parking brake engaged. Failure to do so can cause injury or death.

W-2006-1209

Start the engine and operate for approximately 10 seconds while a second person, wearing safety glasses, holds a piece of wood over the outlet of the muffler. This will force contaminants out through the cleanout hole.

Stop the engine. Install and tighten the plug. Close the rear door.

TYRE MAINTENANCE

Wheel Nuts

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 122.)

Figure 251



Follow the torques specified below for the wheel nuts [Figure 251]:

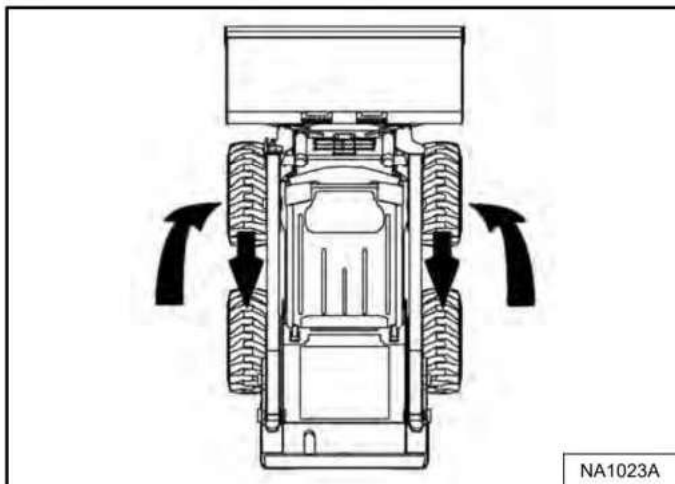
When *installing* wheel nuts, tighten to 217 N•m (160 ft-lb) torque.

When *checking* wheel nut torque, set the torque wrench to 190 N•m (140 ft-lb) to prevent overtightening.

Rotating

Check the tyres regularly for wear, damage, and pressure.

Figure 252



Rear tyres usually wear faster than front tyres. To keep tyre wear even, move the front tyres to the rear and rear tyres to the front [Figure 252].

The same size tyres must be used on each side of the loader. If different sizes are used, each tyre will turn at a different rate and cause excessive wear. The tread bars of all the tyres must face the same direction.

Recommended tyre pressure must be maintained to avoid excessive tyre wear, loss of stability, and loss of handling capability. Check for correct pressure before operating the loader. (See Tyres on Page 207.)

Mounting

Tyres are to be repaired only by an authorised person using the proper procedures and safe equipment.

Tyres and rims must always be checked for correct size before mounting. Check rim and tyre bead for damage.

The rim flange must be cleaned and free of rust.

The tyre bead and rim flange must be lubricated with a rubber lubricant before mounting the tyre.

Avoid excessive pressure that can rupture the tyre and cause serious injury or death.

During inflation of the tyre, check the tyre pressure frequently to avoid over inflation.

! WARNING

AVOID INJURY OR DEATH

Do not inflate tyres above specified pressure. Failure to use correct tyre mounting procedure can cause an explosion which can result in injury or death.

W-2078-EN-0909

IMPORTANT

Inflate tyres to the **MAXIMUM** pressure shown on the sidewall of the tyre. **DO NOT** mix brands of tyres used on the same machine.

I-2057-EN-1010

FINAL DRIVE TRANSMISSION (CHAINCASE)

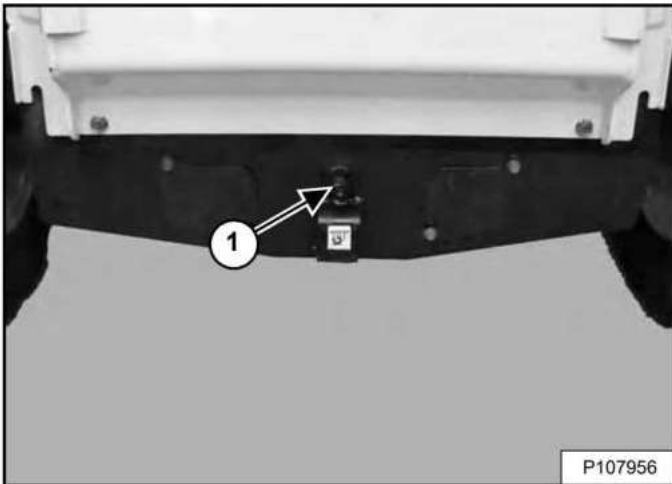
Checking And Adding Fluid

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 122.)

The chaincase contains the final drive sprockets and chains, and uses the same type fluid as the hydraulic / hydrostatic system. (See Hydraulic / Hydrostatic Fluid Chart on Page 163.)

Park the loader on a level surface and stop the engine.

Figure 253



Remove the check plug (Item 1) [Figure 253] from the front of the chaincase housing. (Lift arms shown raised for visual clarity.)

If fluid can be reached with the tip of your finger through the hole, the fluid level is correct.

If the level is low, add fluid through the check plug hole until fluid flows from the hole.

Install and tighten the plug [Figure 253].

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

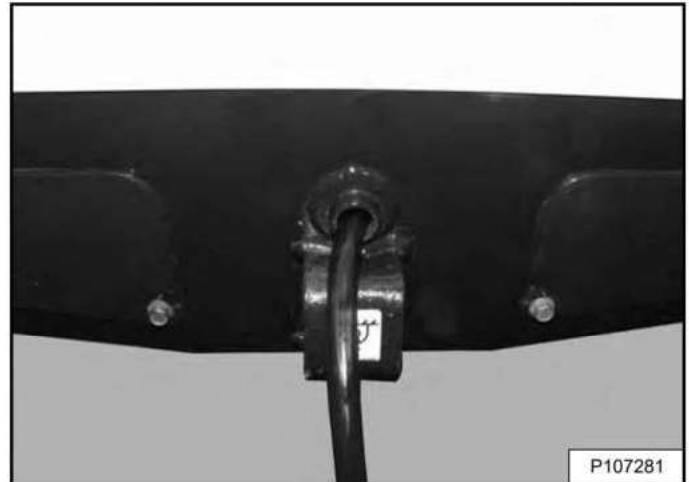
Removing And Replacing Fluid

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 122.)

Park the loader on a level surface and stop the engine.

Remove the check plug (Item 1) [Figure 253] from the front of the chaincase housing.

Figure 254



Pump the fluid out of the chaincase [Figure 254]. (Lift arms shown raised for visual clarity.)

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

Add fluid through the check plug hole until fluid flows from the hole. (See Capacities on Page 206.)

Install and tighten the plug [Figure 253].

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.

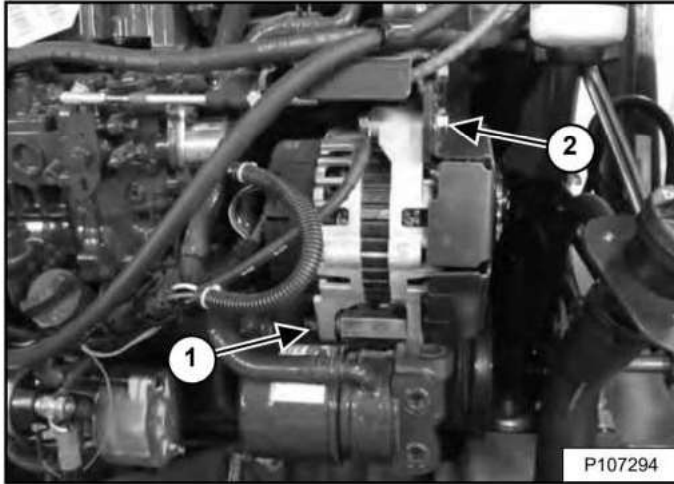
W-2103-0508

ALTERNATOR BELT

Belt Adjustment

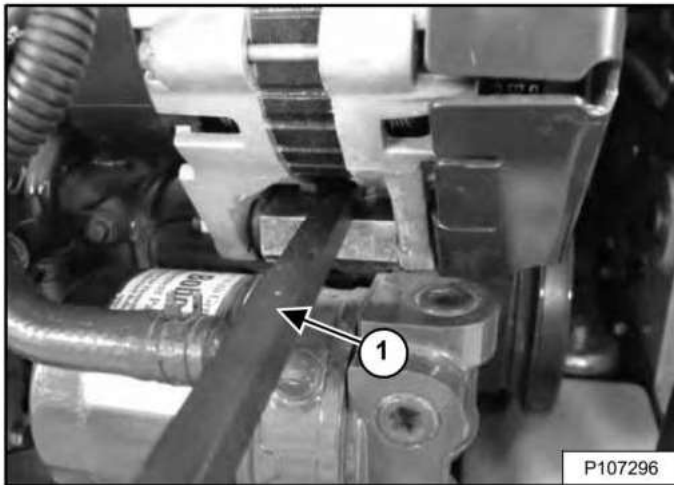
Stop the engine and open the rear door.

Figure 255



Loosen the bottom alternator mounting nut (Item 1) and loosen the top alternator adjusting bolt (Item 2) [Figure 255].

Figure 256



Use a prybar (Item 1) [Figure 256] to move the alternator until the belt has 8 mm (0.32 in) movement at the middle of the belt span with 66 N (15 lb) of force.

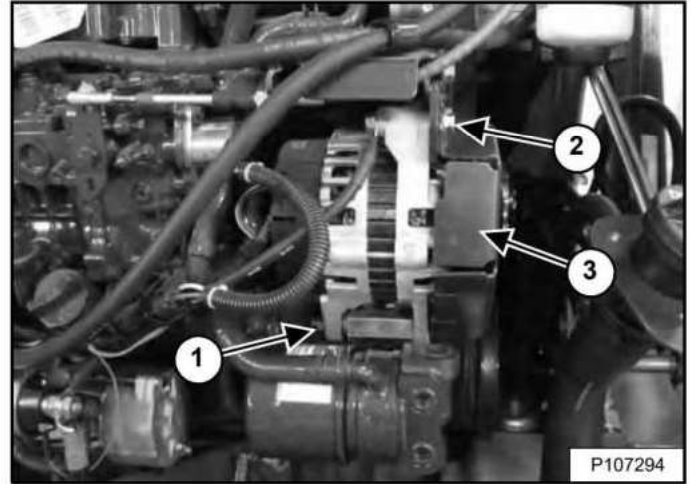
Tighten the top alternator adjusting bolt (Item 2) and the bottom alternator mounting nut (Item 1) [Figure 255].

Close the rear door.

Belt Replacement

Stop the engine and open the rear door.

Figure 257



Loosen the bottom alternator mounting nut (Item 1) and remove the top alternator adjusting bolt (Item 2) [Figure 257].

Remove the alternator belt shield (Item 3) [Figure 257].

Remove the air conditioning belt. (See AIR CONDITIONING BELT on Page 174.)

Move the alternator toward the engine fully and remove the belt from the pulleys.

Inspect the pulleys for wear.

Install new belt.

Install the air conditioning belt. (See AIR CONDITIONING BELT on Page 174.)

Install the alternator belt shield and top adjusting bolt [Figure 257].

Adjust alternator belt. (See Figure 256 on Page 173.)

Close the rear door.

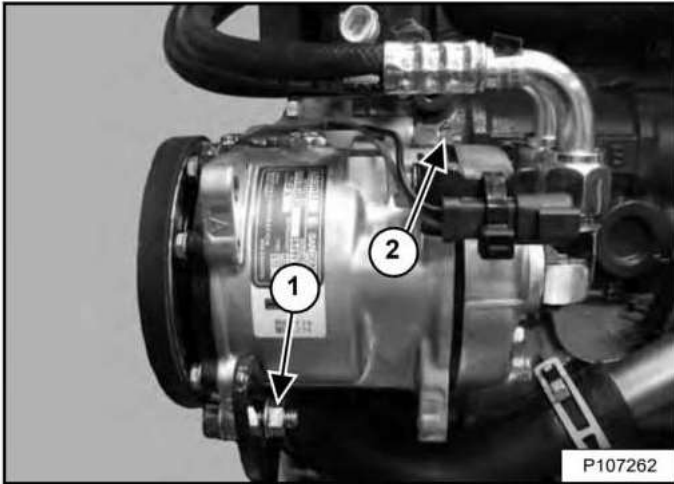
AIR CONDITIONING BELT

This machine may be equipped with air conditioning.

Belt Adjustment

Stop the engine and open the rear door.

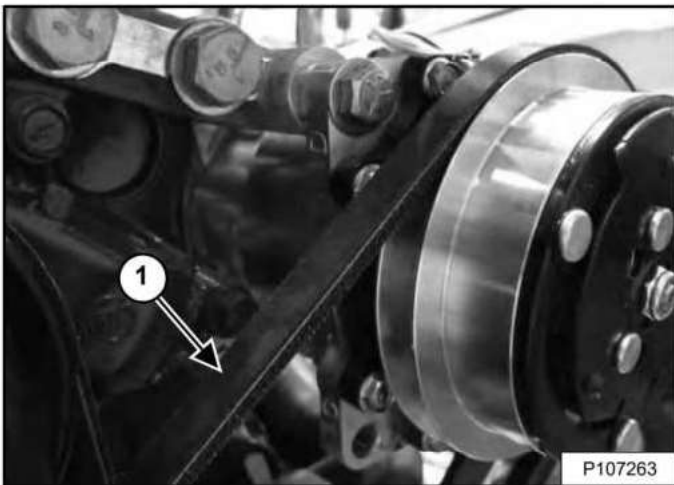
Figure 258



NOTE: The engine is shown removed for visual clarity.

Loosen the bottom air conditioning compressor adjusting nut (Item 1) and loosen the top air conditioning compressor mounting nut (Item 2) [Figure 258].

Figure 259



Move the air conditioning compressor until the belt (Item 1) [Figure 259] has 4 mm (0.16 in) movement at the middle of the belt span with 17 N (3.8 lb) of force.

Tighten the adjusting nut (Item 1) and mounting nut (Item 2) [Figure 258].

Close the rear door.

Belt Replacement

Stop the engine and open the rear door.

Loosen the bottom air conditioning compressor adjusting nut (Item 1) and loosen the top air conditioning compressor mounting nut (Item 2) [Figure 258].

Move the air conditioning compressor toward the engine fully and remove the belt from the pulleys.

Inspect the pulleys for wear.

Install new belt.

Adjust air conditioning belt. (See Figure 259 on Page 174.)

Close the rear door.

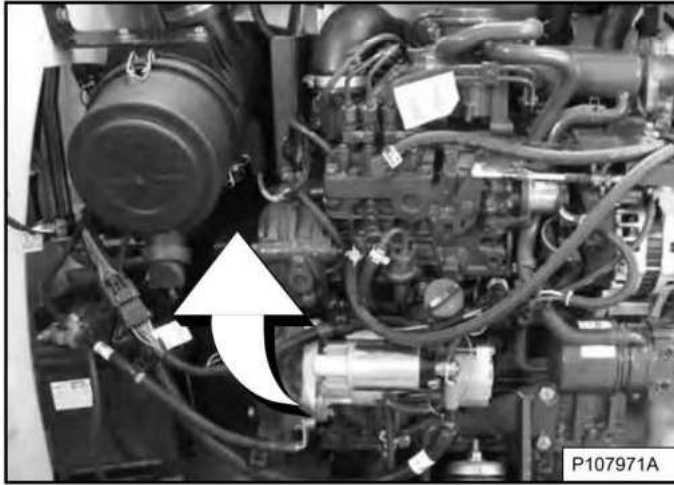
DRIVE BELT

Belt Adjustment

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 122.)

Stop the engine and open the rear door.

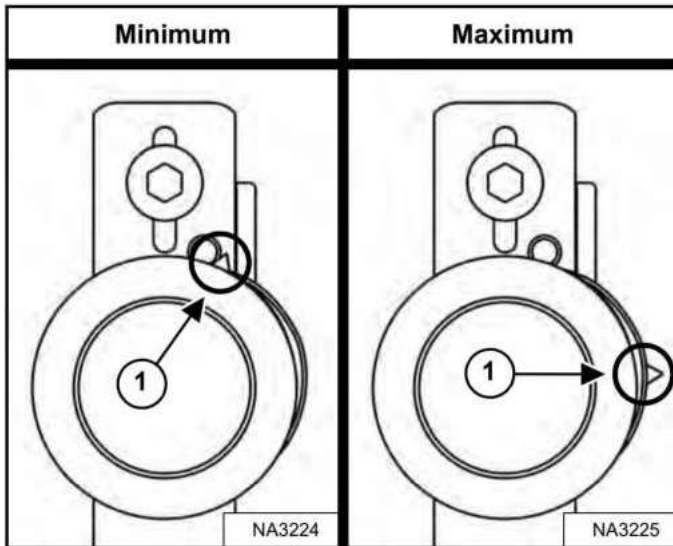
Figure 260



The spring loaded drive idler is located below the air cleaner [Figure 260].

Inspection

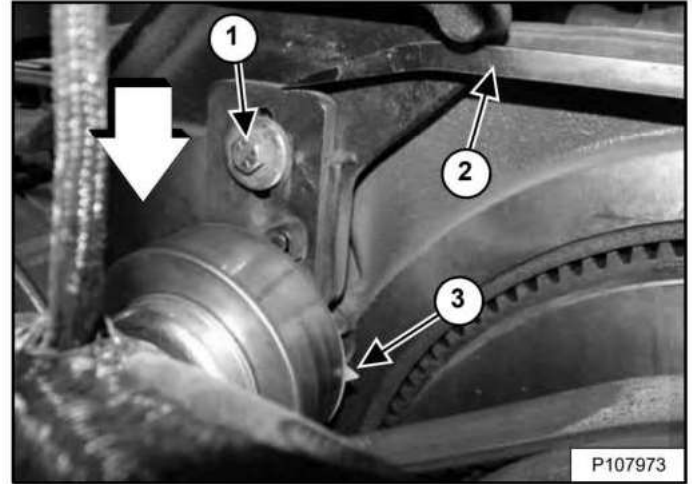
Figure 261



The pointer (Item 1) [Figure 261] on the spring loaded drive idler must be maintained between the two positions shown for correct belt tension.

Adjustment

Figure 262



Loosen the spring loaded drive idler mounting bolt (Item 1) [Figure 262].

Push the spring loaded drive idler against the belt using a pry bar (Item 2). The pointer will be at the 90 degree position (Item 3) [Figure 262] when the idler is against the stop.

Allow the spring loaded drive idler to raise slightly so that the idler is operating on spring tension and not against the stop.

NOTE: Do not set the spring loaded drive idler against the travel stop.

Tighten the spring loaded drive idler mounting bolt (Item 1) [Figure 262] to 48 - 54 N•m (35 - 40 ft-lb) torque.

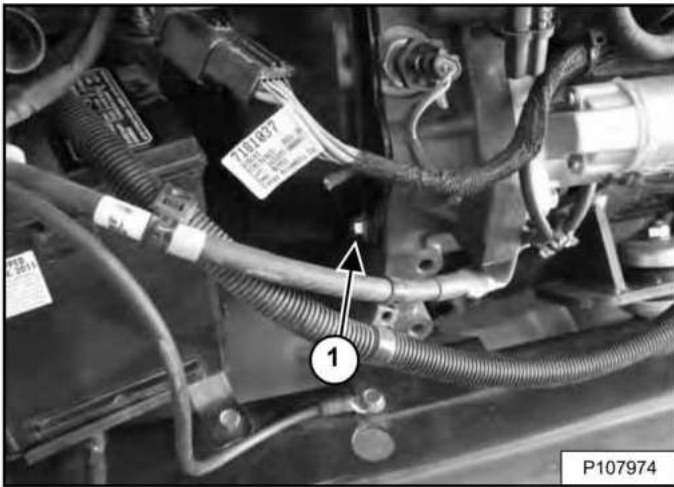
Close the rear door.

DRIVE BELT (CONT'D)

Belt Replacement

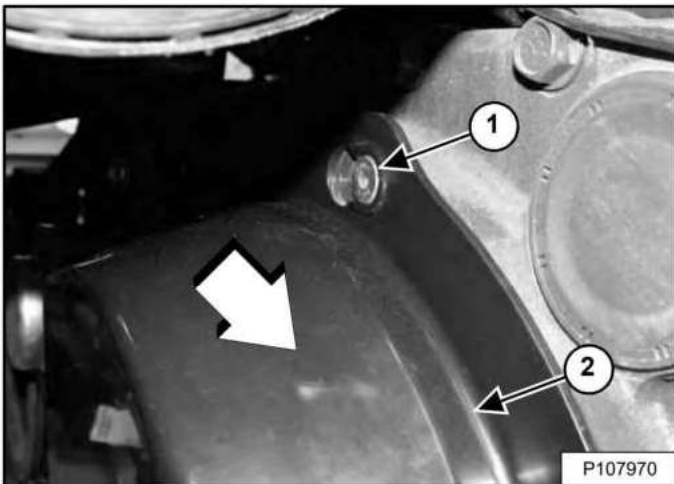
Stop the engine and open the rear door.

Figure 263



Remove the drive belt shield bolt (Item 1) [Figure 263].

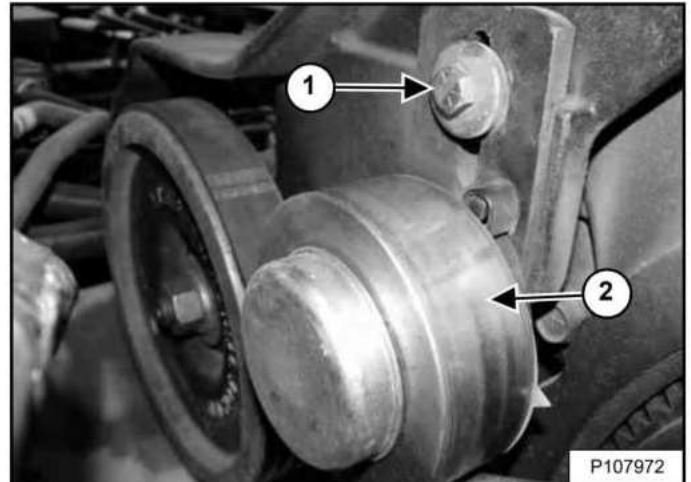
Figure 264



Do **NOT** loosen the drive belt shield mounting bolts (top bolt shown) (Item 1). Slide the drive belt shield (Item 2) [Figure 264] toward the back of the loader to unseat the shield from the top and bottom drive belt shield mounting bolts.

Remove the drive belt shield (Item 2) [Figure 264].

Figure 265



Loosen the spring loaded drive idler mounting bolt (Item 1) and allow the idler (Item 2) [Figure 265] to move up. Remove the mounting bolt, washer, and idler assembly.

Remove the drive belt from the hydrostatic pump pulley and flywheel pulley. Inspect the pulleys for wear.

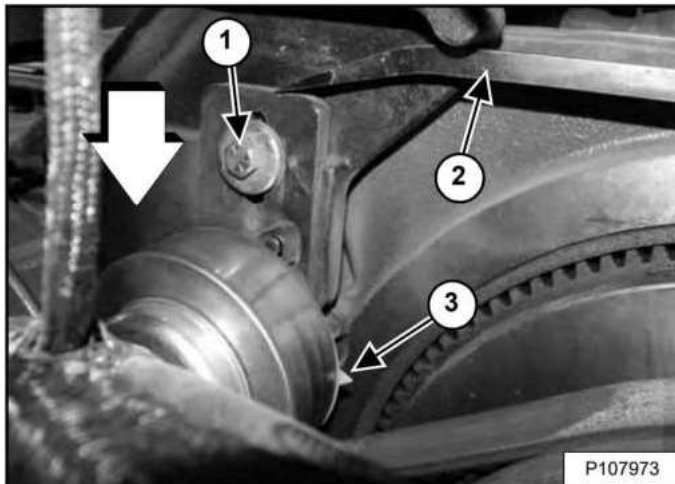
Install new drive belt.

Apply Loctite® 242 to the mounting bolt. Install the spring loaded drive idler, washer, and mounting bolt [Figure 265].

DRIVE BELT (CONT'D)

Belt Replacement (Cont'd)

Figure 266



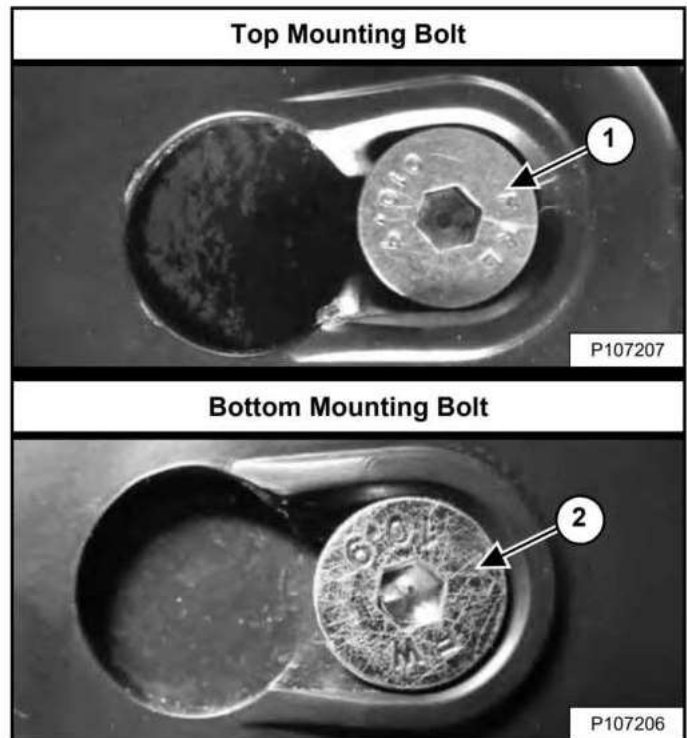
Push the spring loaded drive idler against the belt using a pry bar (Item 2). The pointer will be at the 90 degree position (Item 3) [Figure 266] when the idler is against the stop.

Allow the spring loaded drive idler to raise slightly so that the idler is operating on spring tension and not against the stop.

NOTE: Do not set the spring loaded drive idler against the travel stop.

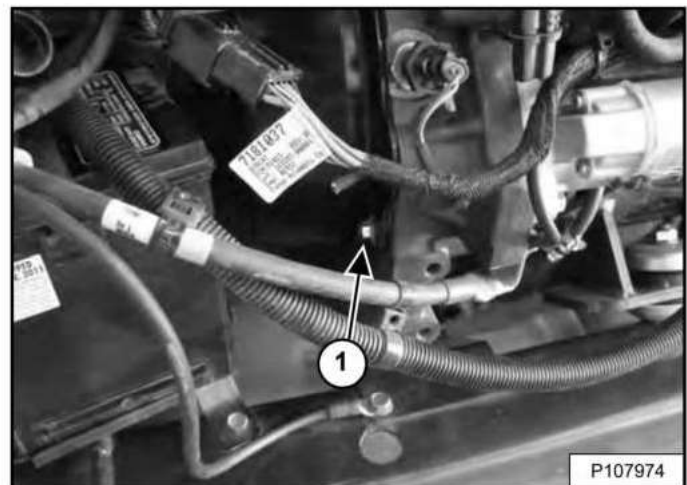
Tighten the spring loaded drive idler mounting bolt (Item 1) [Figure 266] to 48 - 54 N•m (35 - 40 ft-lb) torque.

Figure 267



Position the drive belt shield over the drive belt shield mounting bolts. Slide the drive belt shield toward the front of the loader to fully seat the shield onto the top and bottom mounting bolts (Items 1 and 2) [Figure 267].

Figure 268



Install the drive belt shield bolt (Item 1) [Figure 268].

Close the rear door.

AUTOMATIC RIDE CONTROL ACCUMULATOR

Checking Accumulator Charge

This machine may be equipped with Automatic Ride Control.

The nitrogen charge in your accumulator will decrease over time. This will result in decreased effectiveness of the automatic ride control benefits.

NOTE: The signs of a low accumulator charge include: excessive lift arm movement, reduced ride control performance, or loss of ride control function.

Special tools and equipment are required to check and service the nitrogen charge in the accumulator.



WARNING

**RIDE CONTROL ACCUMULATOR INSTALLED
PRESSURISED FLUID CAN CAUSE SERIOUS INJURY**
After fully lowering the lift arms or installing an approved lift arm support device, use lift arm bypass control for 5 seconds to release pressure from lift circuit before servicing.

See Operation & Maintenance Manual or Service Manual for lift arm bypass control instructions.

W-3015-EN-0816

See your Bobcat dealer for service if you believe that your automatic ride control accumulator charge is low.

LUBRICATING THE LOADER

Lubrication Locations

See the SERVICE SCHEDULE for the correct service interval. (See SERVICE SCHEDULE on Page 122.)

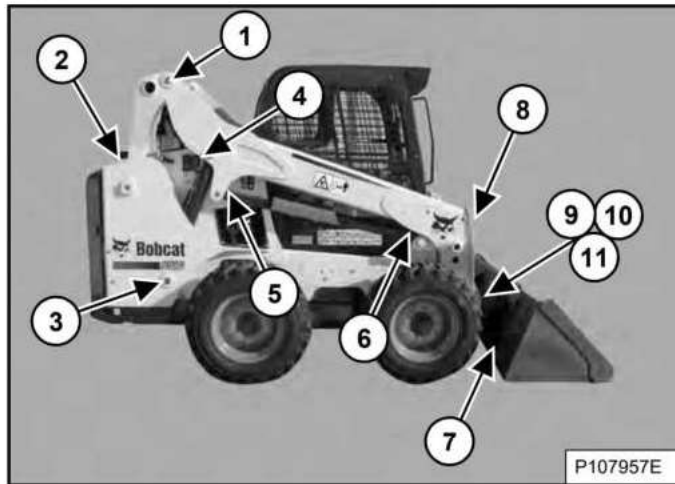
Record the operating hours each time you lubricate the Bobcat loader.

Always use a good quality lithium based multipurpose grease when you lubricate the loader. Apply the lubricant until extra grease shows.

Remove attachment from the loader. (See Installing And Removing The Attachment (Hand Lever Bob-Tach) on Page 107.) **OR** (See Installing And Removing The Attachment (Power Bob-Tach) on Page 110.)

Stop the engine.

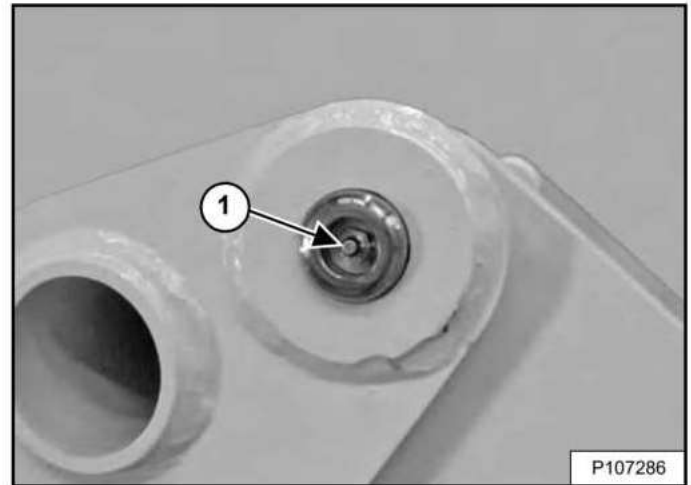
Figure 269



The grease fitting locations [Figure 269] are shown in more detail in the following figures.

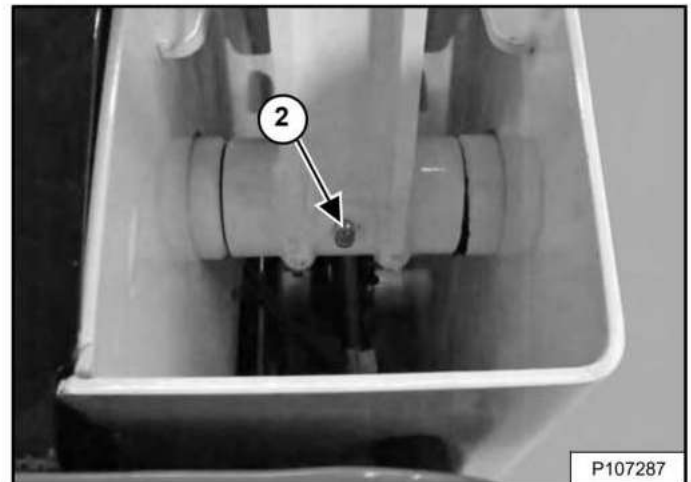
Lubricate the following:

Figure 270



1. Lift Arm Pivot Pin (Both Sides) (2) [Figure 270].

Figure 271

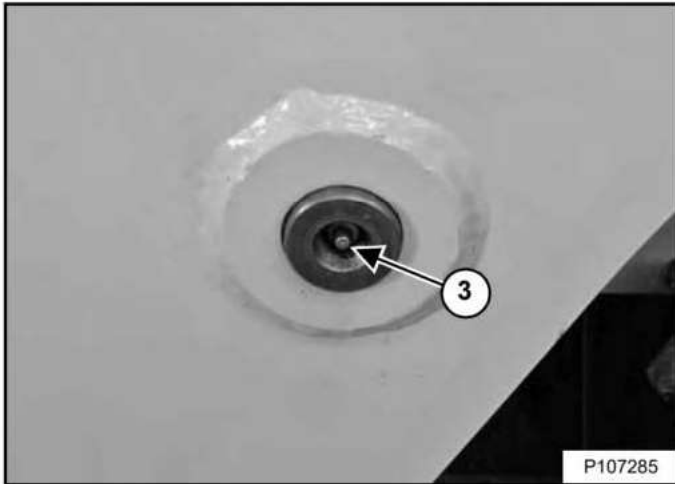


2. Lift Arm Link Pivot (Both Sides) (2) [Figure 271].

LUBRICATING THE LOADER (CONT'D)

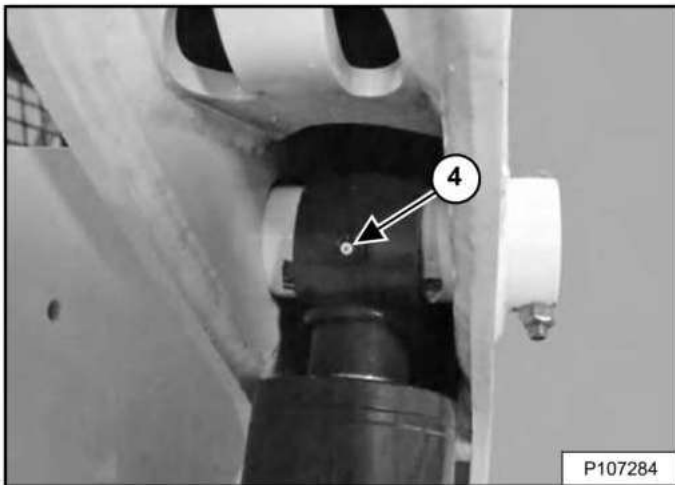
Lubrication Locations (Cont'd)

Figure 272



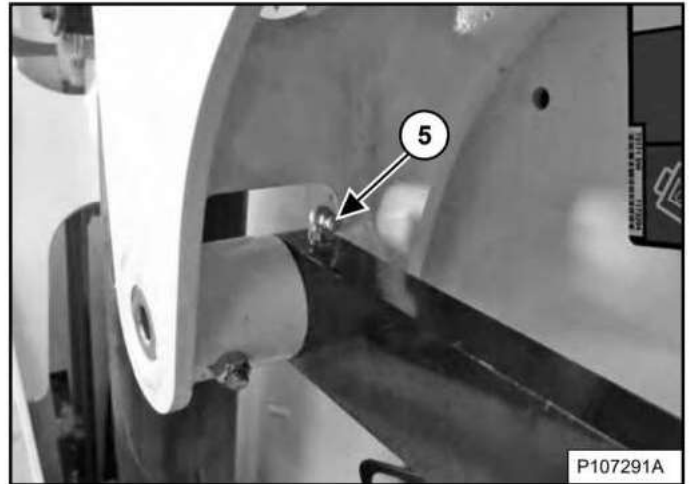
3. Base End Lift Cylinder (Both Sides) (2) [Figure 272].

Figure 273



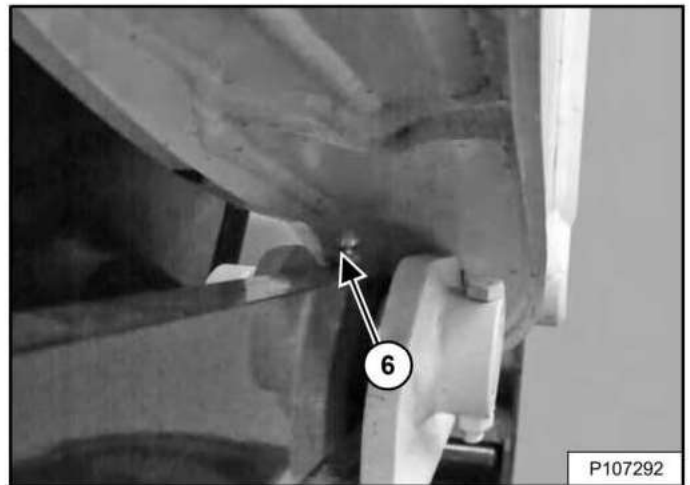
4. Rod End Lift Cylinder (Both Sides) (2) [Figure 273].

Figure 274



5. Rear Control Link (Both Sides) (2) [Figure 274].

Figure 275

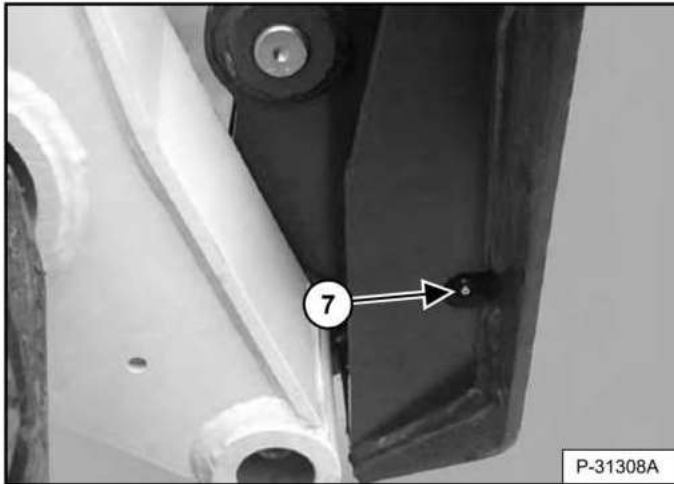


6. Front Control Link (Both Sides) (2) [Figure 275].

LUBRICATING THE LOADER (CONT'D)

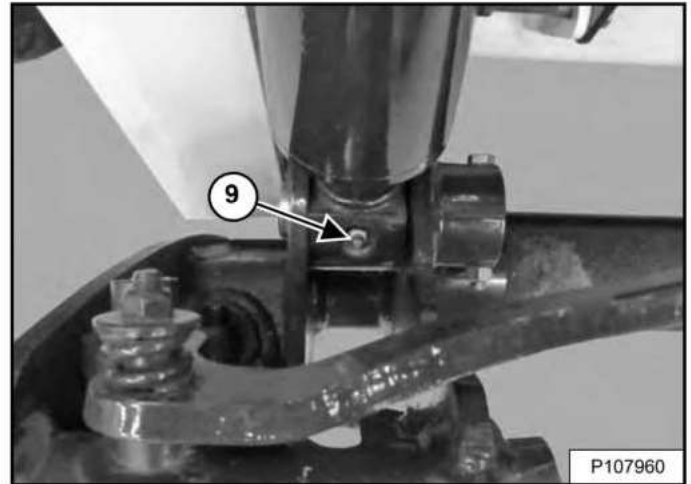
Lubrication Locations (Cont'd)

Figure 276



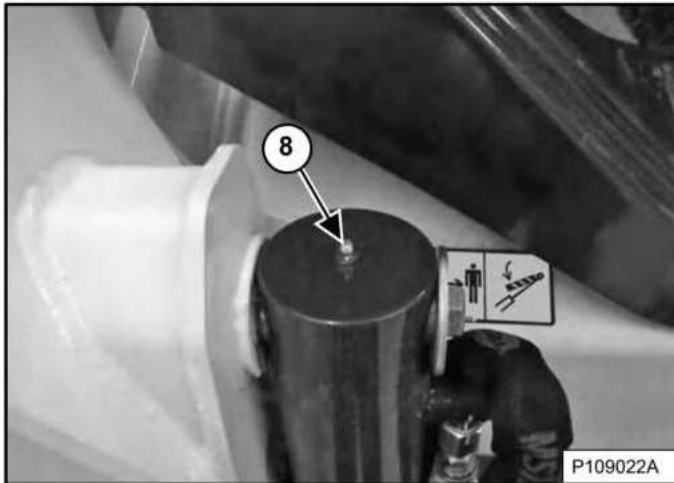
7. Bob-Tach Wedge (Both Sides) (2) [Figure 276].

Figure 278



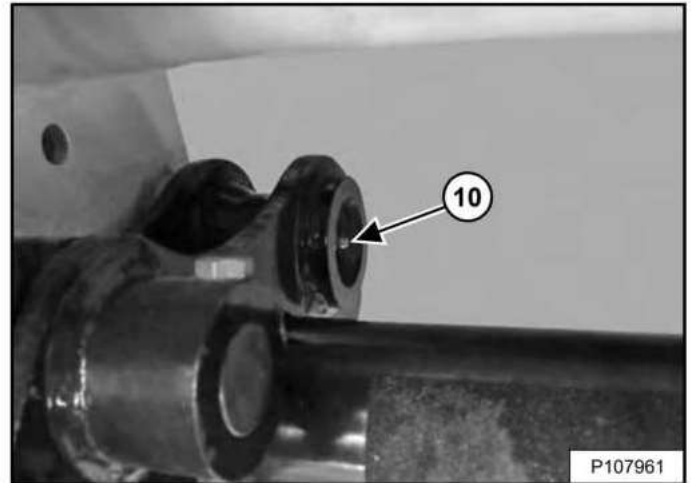
9. Rod End Tilt Cylinder (Both Sides) (2) [Figure 278].

Figure 277



8. Base End Tilt Cylinder (Both Sides) (2) [Figure 277].

Figure 279



10. Bob-Tach Pivot Pin (Both Sides) (2) [Figure 279].

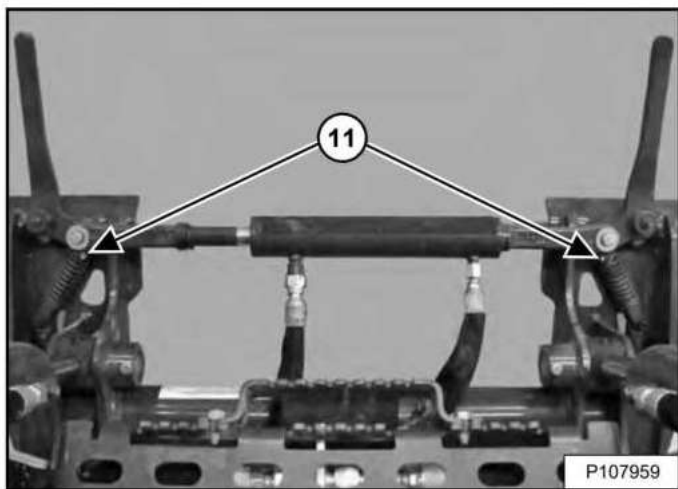
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LUBRICATING THE LOADER (CONT'D)

Lubrication Locations (Cont'd)

If Equipped With Power Bob-Tach

Figure 280

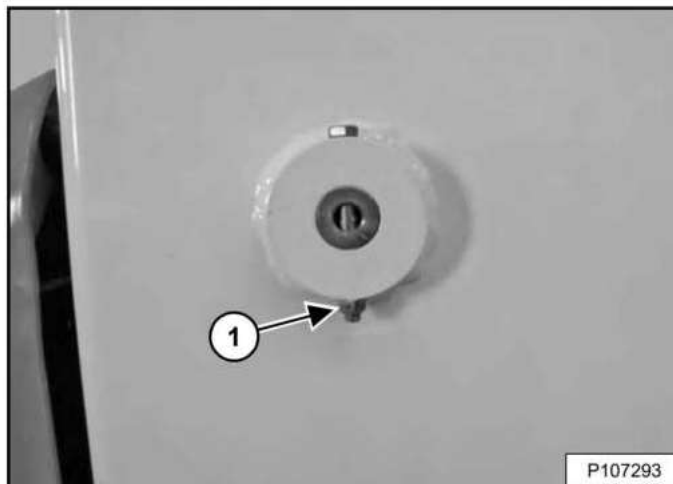


11. Power Bob-Tach Hydraulic Cylinder (2) [Figure 280].

PIVOT PINS

Inspection And Maintenance

Figure 281



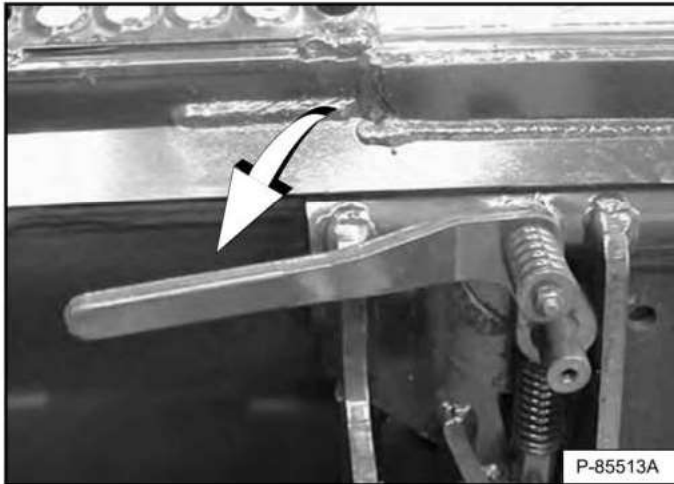
All lift arm and cylinder pivots have a large pin held in position with a retainer bolt and locknut (Item 1) [Figure 281].

Check that the locknuts are tightened to 48 - 54 N•m (35 - 40 ft-lb) torque.

BOB-TACH (HAND LEVER)

Inspection And Maintenance

Figure 282



Move the Bob-Tach levers down to engage the wedges [Figure 282].

The levers and wedges must move freely.

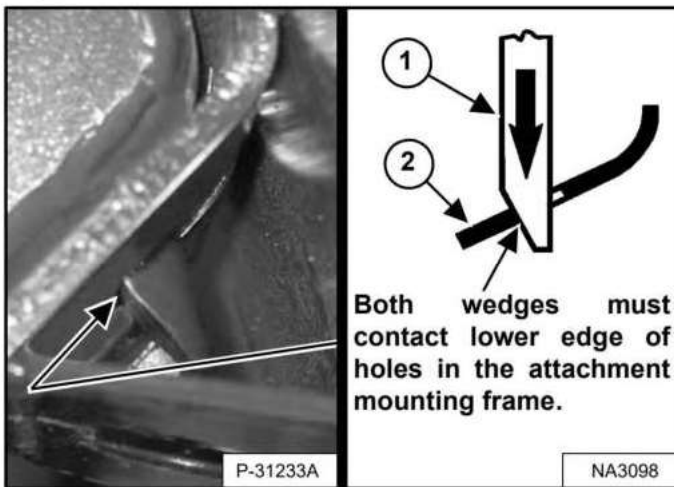
WARNING

AVOID INJURY OR DEATH

The Bob-Tach wedges must extend through the holes in the attachment mounting frame. Levers must be fully down and locked. Failure to secure wedges can allow attachment to come off.

W-2715-0208

Figure 283

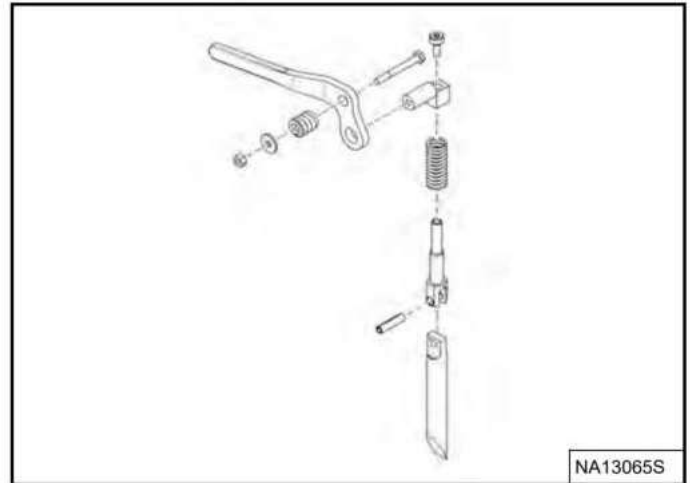


The wedges (Item 1) [Figure 283] must extend through the holes in the attachment mounting frame.

The spring loaded wedges (Item 1) must contact the lower edge of the holes in the attachment mounting frame (Item 2) [Figure 283].

If the wedges do not contact the lower edge of the holes [Figure 283], the attachment will be loose and can come off the Bob-Tach.

Figure 284



Inspect the mounting frame on the attachment and Bob-Tach, linkages, and wedges for excessive wear or damage [Figure 284]. Replace any parts that are damaged, bent, or missing. Keep all fasteners tight.

Look for cracked welds. Contact your Bobcat dealer for repair or replacement parts.

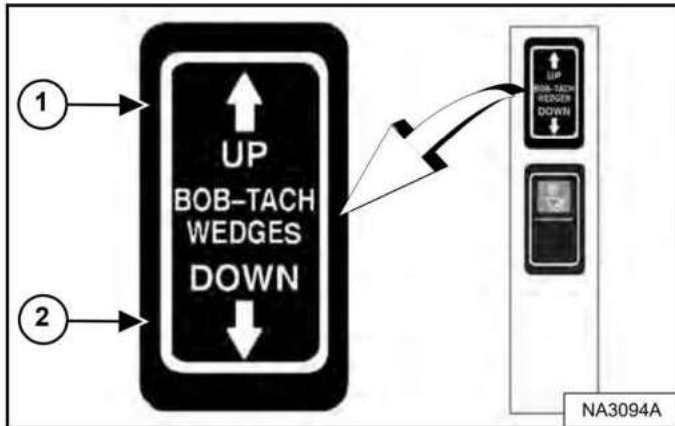
Lubricate the wedges. (See SERVICE SCHEDULE on Page 122.) and (See LUBRICATING THE LOADER on Page 179.)

BOB-TACH (POWER)

This machine may be equipped with a Power Bob-Tach.

Inspection And Maintenance

Figure 285



Push and hold the BOB-TACH WEDGES "UP" switch (Item 1) until wedges are fully raised. Push and hold the BOB-TACH WEDGES "DOWN" switch (Item 2) [Figure 285] until the wedges are fully down.

The levers and wedges must move freely.

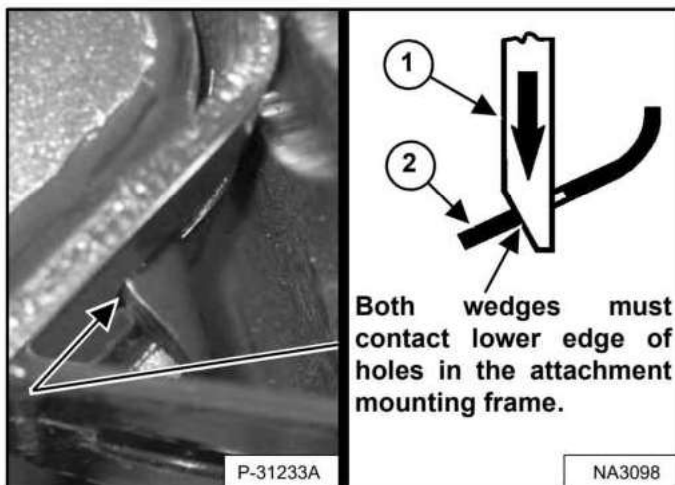
! WARNING

AVOID INJURY OR DEATH

The Bob-Tach wedges must extend through the holes in the attachment mounting frame. Levers must be fully down and locked. Failure to secure wedges can allow attachment to come off.

W-2715-0208

Figure 286

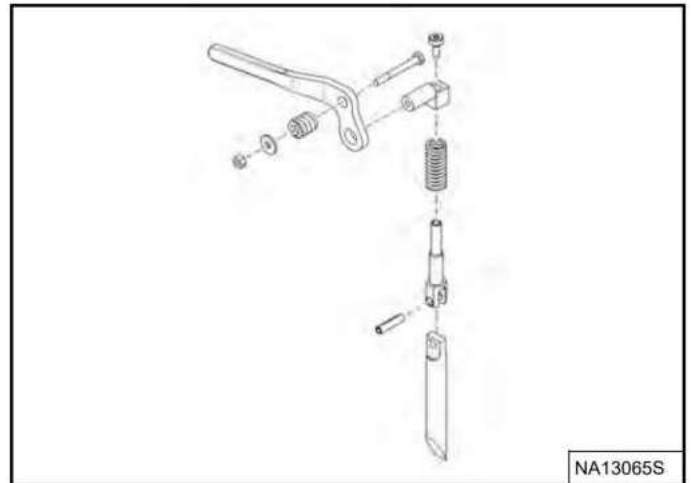


The wedges (Item 1) [Figure 286] must extend through the holes in the attachment mounting frame.

The spring loaded wedges (Item 1) must contact the lower edge of the holes in the attachment mounting frame (Item 2) [Figure 286].

If the wedges do not contact the lower edge of the holes [Figure 286], the attachment will be loose and can come off the Bob-Tach.

Figure 287



Inspect the mounting frame on the attachment and Bob-Tach, linkages, and wedges for excessive wear or damage [Figure 287]. Replace any parts that are damaged, bent, or missing. Keep all fasteners tight.

Look for cracked welds. Contact your Bobcat dealer for repair or replacement parts.

Lubricate the wedges. (See SERVICE SCHEDULE on Page 122.) and (See LUBRICATING THE LOADER on Page 179.)

LOADER STORAGE AND RETURN TO SERVICE

Storage

You may decide to store your Bobcat loader for an extended period of time. Perform the procedures below for storage:

- Thoroughly clean the loader including the engine compartment.
- Lubricate the loader.
- Replace worn or damaged parts.
- Park the loader in a dry protected shelter.
- Lower the lift arms all the way and put the bucket flat on the ground.
- Put blocks under the frame to remove weight from the tyres.
- Put grease on any exposed cylinder rods.
- Put fuel stabiliser in the fuel tank and operate the engine a few minutes to circulate the stabiliser to the pump and fuel injectors.

If biodiesel blend fuel has been used, perform the following:

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

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

Return To Service

After the Bobcat loader has been in storage, perform the procedures below to return the loader to service:

- Check the engine oil and hydraulic fluid levels; check coolant level.
- Install a fully charged battery.
- Remove grease from exposed cylinder rods.
- Check all belt tensions.
- Be sure all shields and guards are in position.
- Lubricate the loader.
- Check tyre inflation and remove blocks from under frame.
- Remove cover from exhaust pipe opening.
- Start the engine and operate for a few minutes while observing the instrument panels and systems for correct operation.
- Operate machine, check for correct function.
- Stop the engine and check for leaks. Repair as needed.

SYSTEM SETUP AND ANALYSIS

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DIAGNOSTIC SERVICE CODES

Viewing Service Codes

The Service Codes will aid your dealer in diagnosing conditions that can damage your machine.

Left Panel

Figure 288



Press the Information button (Item 2) to cycle the data display (Item 1) [Figure 288] until the service code screen is displayed. If more than one service code is present, the codes will scroll on the data display.

When no service code is present, [NONE] is displayed [Figure 288].

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

Deluxe Instrumentation Panel

The optional Deluxe Instrumentation Panel offers an additional view of service codes that includes a brief description.

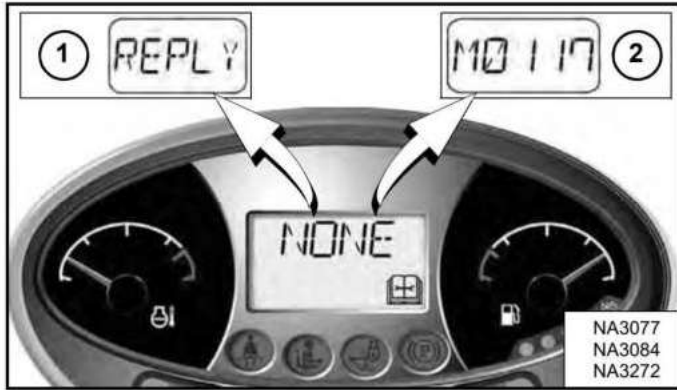
The last 40 codes stored in history can also be viewed using the Deluxe Instrumentation Panel.

<p>Press a scroll button (Item 1) repeatedly until the Active Warnings screen icon (Inset) is highlighted.</p>	<p>Press a scroll button (Item 1) repeatedly until the Active Warnings screen icon (Inset) is highlighted.</p>
<p>The ACTIVE WARNINGS screen displays active service codes. Press [9] to view the next service code if more than one is present. Press [4] to display a history of service codes.</p>	<p>The ACTIVE WARNINGS screen displays active service codes. Press [9] to view the next service code if more than one is present. Press [4] to display a history of service codes.</p>
<p>The WARNINGS HISTORY screen will list the Service Code Number (CODE), Hourmeter reading when the error occurred (HOUR), and the User (USER) who was logged in to operate the machine when the error occurred.</p>	<p>The WARNINGS HISTORY screen will list the Service Code Number (CODE), Hourmeter reading when the error occurred (HOUR), and the User (USER) who was logged in to operate the machine when the error occurred.</p>
<p>Press [9] to view the next eight service codes.</p>	
<p>A total of 40 codes can be stored. When more than 40 codes occur, the oldest code will disappear and the newest code will be in the number 1 position.</p>	
<p>Press the list number next to the service code for more detail.</p> <p>Press the left scroll button to back up one screen.</p>	<p>Press the list number next to the service code for more detail.</p> <p>Press the left scroll button to back up one screen.</p>

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Service Codes List

Figure 289



Service codes may be either a word (Item 1) or a number (Item 2) [Figure 289].

The following word errors may be displayed:

[REPLY] One or both instrument panel(s) not communicating with the controller.

[CODE] The controller is asking for a password. (Keyless Start and Deluxe Instrumentation Panels only.)

[ERROR] The wrong password was entered. (Keyless Start and Deluxe Instrumentation Panels only.)

[SHTDN] A shutdown condition exists.

[DOOR] Operator cab door is open. (Lift and Tilt functions will not operate.)

[RFOFF] Reversing fan is disabled. (See Reversing Fan on Page 82.)

CODE	DESCRIPTION	CODE	DESCRIPTION
A0618	Wheel speed out of range	A8307	ACD output 'D' open circuit
A3623	ACD not programmed	A8332	ACD output 'D' overcurrent
A4621	5 volt sensor supply out of range high	A8402	ACD output 'E' error ON
A4622	5 volt sensor supply out of range low	A8403	ACD output 'E' error OFF
A4721	8 volt sensor supply out of range high	A8405	ACD output 'E' short to battery
A4722	8 volt sensor supply out of range low	A8406	ACD output 'E' short to earth
A7701	Machine key active	A8407	ACD output 'E' open circuit
A7901	E-Stop active	A8432	ACD output 'E' overcurrent
A8002	ACD output 'A' error ON	A8502	ACD output 'F' error ON
A8003	ACD output 'A' error OFF	A8503	ACD output 'F' error OFF
A8005	ACD output 'A' short to battery	A8505	ACD output 'F' short to battery
A8006	ACD output 'A' short to earth	A8506	ACD output 'F' short to earth
A8007	ACD output 'A' open circuit	A8507	ACD output 'F' open circuit
A8032	ACD output 'A' overcurrent	A8532	ACD output 'F' overcurrent
A8102	ACD output 'B' error ON	A8602	ACD output 'G' error ON
A8103	ACD output 'B' error OFF	A8603	ACD output 'G' error OFF
A8105	ACD output 'B' short to battery	A8605	ACD output 'G' short to battery
A8106	ACD output 'B' short to earth	A8606	ACD output 'G' short to earth
A8107	ACD output 'B' open circuit	A8607	ACD output 'G' open circuit
A8132	ACD output 'B' overcurrent	A8702	ACD output 'H' error ON
A8202	ACD output 'C' error ON	A8703	ACD output 'H' error OFF
A8203	ACD output 'C' error OFF	A8705	ACD output 'H' short to battery
A8205	ACD output 'C' short to battery	A8706	ACD output 'H' short to earth
A8206	ACD output 'C' short to earth	A8707	ACD output 'H' open circuit
A8207	ACD output 'C' open circuit	A8802	Reverse solenoid error ON
A8232	ACD output 'C' overcurrent	A8803	Reverse solenoid error OFF
A8302	ACD output 'D' error ON		
A8303	ACD output 'D' error OFF	D3905	Left joystick X-axis not in NEUTRAL
A8305	ACD output 'D' short to battery	D3907	Left joystick Y-axis not in NEUTRAL
A8306	ACD output 'D' short to earth	D4007	Right joystick Y-axis not in NEUTRAL

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DIAGNOSTIC SERVICE CODES (CONT'D)

Service Codes List (Cont'd)

CODE	DESCRIPTION	CODE	DESCRIPTION
D7501	Drive CAN joystick information error	D7546	Drive right reverse drive solenoid error ON
D7504	Drive no communication from drive controller	D7547	Drive right front steer extend short to battery
D7505	Drive left joystick X-axis not in NEUTRAL	D7548	Drive left front steer extend short to battery
D7507	Drive left joystick Y-axis not in NEUTRAL	D7549	Drive right rear steer extend short to battery
D7508	Drive right joystick Y-axis not in NEUTRAL	D7550	Drive left rear steer extend short to battery
D7509	Drive operating mode switch short to earth or battery	D7551	Drive steer pressure short to battery
D7510	Drive improper joysticks installed	D7552	Drive back-up alarm error ON
D7511	Drive left speed sensor not connected	D7553	Drive left forward drive solenoid error OFF
D7512	Drive right speed sensor not connected	D7554	Drive left reverse drive solenoid error OFF
D7513	Drive right front wheel angle sensor stuck	D7555	Drive right forward drive solenoid error OFF
D7514	Drive left front wheel angle sensor stuck	D7556	Drive right reverse drive solenoid error OFF
D7515	Drive right rear wheel angle sensor stuck	D7557	Drive right front steer extend short to earth
D7516	Drive left rear wheel angle sensor stuck	D7558	Drive right front steer retract short to earth
D7517	Drive left swash plate not in NEUTRAL	D7559	Drive left front steer extend short to earth
D7518	Drive right swash plate not in NEUTRAL	D7560	Drive left front steer retract short to earth
D7519	Drive left joystick X-axis out of range high	D7561	Drive right rear steer extend short to earth
D7521	Drive left joystick Y-axis out of range high	D7562	Drive right rear steer retract short to earth
D7522	Drive right joystick Y-axis out of range high	D7563	Drive left rear steer extend short to earth
D7523	Drive right front wheel angle sensor out of range high	D7564	Drive left rear steer retract short to earth
D7524	Drive left front wheel angle sensor out of range high	D7565	Drive steer pressure short to earth
D7525	Drive right rear wheel angle sensor out of range high	D7566	Drive back-up alarm error OFF
D7526	Drive left rear wheel angle sensor out of range high	D7567	Drive no communication from Bobcat controller
D7527	Drive left swash plate out of position	D7568	Drive angle sensors not calibrated
D7528	Drive right swash plate out of position	D7569	Drive battery voltage out of range high
D7529	Drive left joystick X-axis out of range low	D7570	Drive interrupted power (also occurs after software updates)
D7531	Drive left joystick Y-axis out of range low	D7571	Drive battery voltage out of range low
D7532	Drive right joystick Y-axis out of range low	D7572	Drive pump not calibrated
D7533	Drive right front wheel angle sensor out of range low	D7573	Drive operating mode switch flipped while operating
D7534	Drive left front wheel angle sensor out of range low	D7574	Drive right wheel speed uncommanded motion
D7535	Drive right rear wheel angle sensor out of range low	D7575	Drive left wheel speed uncommanded motion
D7536	Drive left rear wheel angle sensor out of range low	D7576	Drive no communication from ACS controller
D7537	Drive 5 volt sensor supply 1 out of range low	D7577	Drive left speed sensor out of range high
D7538	Drive 5 volt sensor supply 2 out of range low	D7578	Drive right speed sensor out of range high
D7539	Drive left swash plate sensor out of range high	D7579	Drive left speed sensor out of range low
D7540	Drive left swash plate sensor out of range low	D7580	Drive right speed sensor out of range low
D7541	Drive right swash plate sensor out of range high	D7581	Drive right front steer retract short to battery
D7542	Drive right swash plate sensor out of range low	D7582	Drive left front steer retract short to battery
D7543	Drive left forward drive solenoid error ON	D7583	Drive right rear steer retract short to battery
D7544	Drive left reverse drive solenoid error ON	D7584	Drive left rear steer retract short to battery
D7545	Drive right forward drive solenoid error ON	D7585	Drive 5 volt sensor supply 1 out of range high

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DIAGNOSTIC SERVICE CODES (CONT'D)

Service Codes List (Cont'd)

CODE	DESCRIPTION	CODE	DESCRIPTION
D7586	Drive 5 volt sensor supply 2 out of range high	H2307	Rear base output open circuit
D7587	Drive software update required	H2332	Rear base output overcurrent
D7588	Drive switched power stuck ON	H2405	Rear rod output short to battery
D7589	Drive switched power error OFF	H2406	Rear rod output short to earth
D7590	Drive calibration performed	H2407	Rear rod output open circuit
D7591	Drive left swash plate sensor reversed	H2432	Rear rod output overcurrent
D7592	Drive right swash plate sensor reversed	H2505	Diverter #2 short to battery
D7593	Drive unresponsive right speed sensor	H2506	Diverter #2 short to earth
D7594	Drive unresponsive left speed sensor	H2507	Diverter #2 open circuit
D7595	Drive left speed sensor reverse direction	H2605	Front base output short to battery
D7596	Drive right speed sensor reverse direction	H2606	Front base output short to earth
D7597	Drive controller programmed	H2607	Front base output open circuit
D7598	Drive controller in calibration mode	H2632	Front base output overcurrent
D7599	Drive AWS controller in wheel position calibration mode	H2705	Front rod output short to battery
		H2706	Front rod output short to earth
H1221	Right thumb switch out of range high	H2707	Front rod output open circuit
H1222	Right thumb switch out of range low	H2732	Front rod output overcurrent
H1224	Right thumb switch not in NEUTRAL	H2805	Diverter short to battery
H1321	Left thumb switch out of range high	H2806	Diverter short to earth
H1322	Left thumb switch out of range low	H2807	Diverter open circuit
H1324	Left thumb switch not in NEUTRAL	H2905	High-flow short to battery
H1421	Lift base pressure out of range high	H2906	High-flow short to earth
H1422	Lift base pressure out of range low	H2907	High-flow open circuit
H1502	Ride control output error ON	H2932	High-flow overcurrent
H1503	Ride control output error OFF	H3028	Controller memory failure
H1507	Ride control output open circuit	H3128	Interrupted power failure
H1528	Ride control output failure	H3648	Multiple ACD conflict error
H1602	Ride control relay error ON	H3904	Left joystick in error
H1603	Ride control relay error OFF	H3912	Left joystick thumb switch not in NEUTRAL
H2005	Boost solenoid short to battery	H3913	Left joystick grip no communication
H2006	Boost solenoid short to earth	H3916	Left joystick no communication
H2007	Boost solenoid open circuit	H3928	Left joystick internal failure
H2032	Boost solenoid overcurrent	H3948	Left joystick multiple
H2105	Reverse fan solenoid short to battery	H4004	Right joystick in error
H2106	Reverse fan solenoid short to earth	H4012	Right joystick thumb switch not in NEUTRAL
H2107	Reverse fan solenoid open circuit	H4013	Right joystick grip no communication
H2132	Reverse fan solenoid overcurrent	H4016	Right joystick no communication
H2005	Boost solenoid short to battery	H4028	Right joystick internal failure
H2006	Boost solenoid short to earth	H4048	Right joystick multiple
H2007	Boost solenoid open circuit	H4302	Horn error ON
H2032	Boost solenoid overcurrent	H4303	Horn error OFF
H2305	Rear base output short to battery	H4423	Auxiliary not programmed
H2306	Rear base output short to earth	H4497	Auxiliary controller programmed

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DIAGNOSTIC SERVICE CODES (CONT'D)

Service Codes List (Cont'd)

CODE	DESCRIPTION	CODE	DESCRIPTION
H4502	Right blinker error ON	M0711	Hydraulic fluid temperature extremely high
H4503	Right blinker error OFF	M0715	Hydraulic fluid temperature in shutdown
H4602	Left blinker error ON	M0721	Hydraulic fluid temperature out of range high
H4603	Left blinker error OFF	M0722	Hydraulic fluid temperature out of range low
H4721	8 volt sensor supply out of range high	M0810	Engine coolant temperature too high
H4722	8 volt sensor supply out of range low	M0811	Engine coolant temperature extremely high
H7404	Main controller no communication	M0815	Engine coolant temperature in shutdown
		M0821	Engine coolant temperature out of range high
L0102	Lights button error ON	M0822	Engine coolant temperature out of range low
L0202	High-flow enable / auto idle enable button error ON	M0909	Fuel level too low
L0302	Auxiliary enable button error ON	M0921	Fuel level out of range high
L0402	Information button error ON	M0922	Fuel level out of range low
L7404	Main controller no communication	M1016	Hydraulic charge filter not connected
L7672	Left display panel needs programming	M1017	Hydraulic charge filter plugged
		M1121	Seat bar sensor out of range high
M0116	Air filter not connected	M1122	Seat bar sensor out of range low
M0117	Air filter plugged	M1128	Seat bar sensor failure
M0216	Hydraulic / Hydrostatic filter not connected	M1305	Fuel hold solenoid short to battery
M0217	Hydraulic / Hydrostatic filter plugged	M1306	Fuel hold solenoid short to earth
M0309	System voltage too low	M1307	Fuel hold solenoid open circuit
M0310	System voltage too high	M1402	Fuel pull solenoid error ON
M0311	System voltage extremely high	M1403	Fuel pull solenoid error OFF
M0314	System voltage extremely low	M1407	Fuel pull solenoid open circuit
M0322	System voltage out of range low	M1428	Fuel pull solenoid failure
M0409	Engine oil pressure too low	M1502	Traction lock pull output error ON
M0414	Engine oil pressure extremely low	M1503	Traction lock pull output error OFF
M0415	Engine oil pressure in shutdown	M1507	Traction lock pull output open circuit
M0421	Engine oil pressure out of range high	M1528	Traction lock pull output failure
M0422	Engine oil pressure out of range low	M1605	Traction lock hold solenoid short to battery
M0509	Hydraulic charge pressure too low	M1606	Traction lock hold solenoid short to earth
M0510	Hydraulic charge pressure too high	M1607	Traction lock hold solenoid open circuit
M0511	Hydraulic charge pressure extremely high	M1705	Hydraulic lock valve short to battery
M0514	Hydraulic charge pressure extremely low	M1706	Hydraulic lock valve short to earth
M0515	Hydraulic charge pressure in shutdown	M1707	Hydraulic lock valve open circuit
M0521	Hydraulic charge pressure out of range high	M1732	Hydraulic lock valve overcurrent
M0522	Hydraulic charge pressure out of range low	M1805	Lift spool lock output short to battery
M0610	Engine speed too high	M1806	Lift spool lock output short to earth
M0611	Engine speed extremely high	M1807	Lift spool lock output open circuit
M0613	Engine speed no signal	M1832	Lift spool lock output overcurrent
M0615	Engine speed in shutdown	M2005	Two-speed primary solenoid short to battery
M0618	Engine speed out of range	M2006	Two-speed primary solenoid short to earth
M0634	Engine speed invalid information from ECU	M2007	Two-speed primary solenoid open circuit
M0710	Hydraulic fluid temperature too high	M2032	Two-speed primary solenoid overcurrent

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DIAGNOSTIC SERVICE CODES (CONT'D)

Service Codes List (Cont'd)

CODE	DESCRIPTION	CODE	DESCRIPTION
M2102	Glow plug output error ON	M4621	5 volt sensor supply out of range high
M2103	Glow plug output error OFF	M4622	5 volt sensor supply out of range low
M2107	Glow plug output open circuit	M4721	8 volt sensor supply out of range high
M2128	Glow plug output failure	M4722	8 volt sensor supply out of range low
M2202	Starter output error ON	M4802	Front light relay error ON
M2203	Starter output error OFF	M4803	Front light relay error OFF
M2207	Starter output open circuit	M4902	Rear light relay error ON
M2228	Starter output failure	M4903	Rear light relay error OFF
M2302	Starter relay error ON	M5002	Front light output error ON
M2303	Starter relay error OFF	M5003	Front light output error OFF
M2402	Fuel pull relay error ON	M5007	Front light output open circuit
M2403	Fuel pull relay error OFF	M5028	Front light output failure
M2502	Traction pull relay error ON	M5102	Rear light output error ON
M2503	Traction pull relay error OFF	M5103	Rear light output error OFF
M2602	Glow plug relay error ON	M5107	Rear light output open circuit
M2603	Glow plug relay error OFF	M5128	Rear light output failure
M2721	Throttle primary sensor out of range high	M5202	Press to operate button error ON
M2722	Throttle primary sensor out of range low	M5221	Press to operate button out of range high
M2821	Throttle secondary sensor out of range high	M5222	Press to operate button out of range low
M2822	Throttle secondary sensor out of range low	M5305	Press to operate light short to battery
M3028	Controller memory failure	M5306	Press to operate light short to earth
M3128	Interrupted power failure	M5405	Tilt spool lock short to battery
M3204	ACS (AHC) no communication to Bobcat controller	M5406	Tilt spool lock short to earth
M3304	Deluxe panel no communication	M5407	Tilt spool lock open circuit
M3404	Deluxe panel in error	M5432	Tilt spool lock overcurrent
M3505	Hydraulic fan short to battery	M5902	DPF regeneration switch error ON
M3506	Hydraulic fan short to earth	M6002	DPF inhibit regeneration switch error ON
M3507	Hydraulic fan open circuit	M6102	Remote parked regeneration switch error ON
M3532	Hydraulic fan overcurrent	M6402	Switched power relay error ON
M3705	Two-speed second output short to battery	M6403	Switched power relay error OFF
M3706	Two-speed second output short to earth	M6505	ECU power short to battery
M3707	Two-speed second output open circuit	M6506	ECU power short to earth
M3732	Two-speed second output overcurrent	M6507	ECU power open circuit
M3805	Auxiliary hydraulic lock short to battery	M6604	ECU no communication
M3806	Auxiliary hydraulic lock short to earth	M6702	HVAC output error ON
M3807	Auxiliary hydraulic lock open circuit	M6703	HVAC output error OFF
M3832	Auxiliary hydraulic lock overcurrent	M6707	HVAC output open circuit
M4109	Alternator too low	M6728	HVAC output failure
M4110	Alternator high	M6802	HVAC relay error ON
M4111	Alternator extremely high	M6803	HVAC relay error OFF
M4304	Keyless panel no communication	M7002	Switched power output error ON
M4404	Auxiliary no communication	M7003	Switched power output error OFF
M4510	Water in fuel sensor too high	M7007	Switched power output open circuit
M4511	Water in fuel sensor extremely high	M7028	Switched power output failure
M4521	Water in fuel sensor out of range high	M7304	Remote control no communication
M4522	Water in fuel sensor out of range low	M7316	Remote control no communication to transmitter

DIAGNOSTIC SERVICE CODES (CONT'D)

Service Codes List (Cont'd)

CODE	DESCRIPTION	CODE	DESCRIPTION
M7423	Main controller not programmed	W3233	ACS (AHC) tilt handle wiring
M7472	Main controller needs programming	W3234	ACS (AHC) tilt actuator not in NEUTRAL
M7497	Main controller programmed	W3235	ACS (AHC) tilt handle / pedal not in NEUTRAL
M7504	Drive no communication	W3236	ACS (AHC) lift actuator
M7604	Left display panel no communication	W3237	ACS (AHC) lift actuator wiring
M7748	Key switch multiple	W3238	ACS (AHC) lift handle wiring
M7839	Hourmeter changed	W3239	ACS (AHC) lift actuator not in NEUTRAL
M7974	Door open	W3240	ACS (AHC) lift handle / pedal not in NEUTRAL
M8541	DPF automatic regeneration active	W3241	ACS (AHC) no communication
M8542	DPF automatic regeneration active (Operate machine under load)	W3249	ACS (AHC) lift actuator short to earth
M8551	DPF regeneration needed - inhibit active	W3250	ACS (AHC) tilt actuator short to earth
M8552	DPF regeneration needed - inhibit active (Operate machine under load)	W3251	ACS (AHC) lift actuator short to battery
M8553	DPF remote parked regeneration required (Remote regeneration kit required)	W3252	ACS (AHC) tilt actuator short to battery
M8554	DPF service regeneration required (Contact Bobcat dealer)	W3253	ACS (AHC) lift handle / pedal short to earth
M8555	DPF service required	W3254	ACS (AHC) tilt handle / pedal short to earth
M8560	DPF service regeneration active	W3255	ACS (AHC) lift handle / pedal short to battery
M8561	DPF service regeneration active	W3256	ACS (AHC) tilt handle / pedal short to battery
M8562	DPF service regeneration active	W3257	ACS (AHC) lift actuator reduced performance
M8563	DPF service regeneration active	W3258	ACS (AHC) tilt actuator reduced performance
M8564	DPF service regeneration active	W3259	ACS (AHC) lift actuator wrong direction
M8615	Engine speed derate in shutdown	W3260	ACS (AHC) tilt actuator wrong direction
M8625	Engine speed derate unresponsive	W3261	ACS (AHC) handle lock short to earth
		W3262	ACS (AHC) handle lock short to battery
R7404	Main controller no communication	W3263	ACS (AHC) pedal lock short to earth
		W3264	ACS (AHC) pedal lock short to battery
T9002	Service tool output 'C' error ON	W3265	ACS (AHC) sensor supply voltage out of range
T9003	Service tool output 'C' error OFF	W3266	ACS (AHC) battery voltage out of range
T9102	Service tool output 'D' error ON	W3267	ACS (AHC) switch flipped while operating
T9103	Service tool output 'D' error OFF	W3268	ACS (AHC) lift handle information error
T9202	Service tool output 'E' error ON	W3270	ACS (AHC) right drive handle short to earth
T9203	Service tool output 'E' error OFF	W3271	ACS (AHC) right drive handle short to battery
T9302	Service tool output 'F' error ON	W3274	ACS (AHC) left joystick X-axis out of range
T9303	Service tool output 'F' error OFF	W3275	ACS (AHC) interrupted unswitched power
		W3276	ACS (AHC) CAN joystick information error
W3204	ACS (AHC) no communication to Bobcat controller	W3277	ACS (AHC) remote control information error
W3223	ACS (AHC) calibration required	W3297	ACS (AHC) controller programmed
W3224	ACS (AHC) calibration performed	W3905	Left joystick X-axis not in NEUTRAL
W3225	ACS (AHC) actuator calibration failed	W4005	Right joystick X-axis not in NEUTRAL
W3231	ACS (AHC) tilt actuator	W4007	Right joystick Y-axis not in NEUTRAL
W3232	ACS (AHC) tilt actuator wiring		

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CONTROL PANEL SETUP

Right Panel Setup (Deluxe Instrumentation Panel)

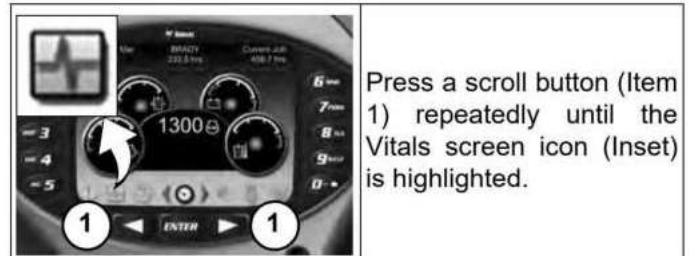
Icon Identification

Figure 290



ICON	DESCRIPTION
	DATE / TIME
	USER / HOURMETER
	CURRENT JOB HOURS
	ACTIVE WARNINGS screen icon
	VITALS screen icon
	SERVICE screen icon
	MAIN screen icon
	ATTACHMENTS screen icon
	SECURITY screen icon
	DISPLAY screen icon
	HOME icon (Return to MAIN screen)
	LEFT SCROLL button
	RIGHT SCROLL button
	ENTER button

Vitals



Press a scroll button (Item 1) repeatedly until the Vitals screen icon (Inset) is highlighted.



Displays select system operating levels.

You can monitor real-time displays of:







- Engine Speed**
- Engine Oil Pressure**
- Engine Coolant Temperature**
- System Voltage**
- Hydraulic Charge Pressure**
- Hydraulic Fluid Temperature**

The Deluxe Instrumentation Panel is easy to use. Continue to set your own preferences for operating / monitoring your Bobcat loader.




CONTROL PANEL SETUP (CONT'D)

Right Panel Setup (Deluxe Instrumentation Panel) (Cont'd)




Date And Time

	<p>Press a scroll button (Item 1) repeatedly until the Display screen icon (Inset) is highlighted.</p>
	<p>Select [1. CLOCKS].</p>
	<p>Select [1. TIME].</p>
	<p>Use the keypad to enter time. Select AM / PM / 24hr. Press [ENTER] to continue.</p>
	<p>Select [2. DATE].</p>
	<p>Use the keypad to enter date. Press [ENTER] to continue.</p>

Languages

	<p>Press a scroll button (Item 1) repeatedly until the Display screen icon (Inset) is highlighted.</p>
	<p>Select [2. LANGUAGES].</p>
	<p>Select the desired language.</p>

English / Metric Display








	<p>Press a scroll button (Item 1) repeatedly until the Display screen icon (Inset) is highlighted.</p>
	<p>Select [4. DISPLAY SETTINGS].</p>
	<p>Press [1] to cycle between ENGLISH and METRIC.</p>

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CONTROL PANEL SETUP (CONT'D)

Right Panel Setup (Deluxe Instrumentation Panel) (Cont'd)

Job Clock Reset

	<p>Press a scroll button (Item 1) repeatedly until the Security screen icon (Inset) is highlighted.</p>
	<p>Select [1. PASSWORDS / LOCKOUTS].</p>
	<p>Enter owner password and press [ENTER].</p>
	<p>Select [1. USER SETTINGS].</p>
	<p>Select user.</p>
	<p>Select [3. RESET JOB STATISTICS].</p>
	<p>Press [9] to reset job statistics. Press left scroll button or [0] to exit without saving.</p>

Machine Lockouts

	<p>Press a scroll button (Item 1) repeatedly until the Security screen icon (Inset) is highlighted.</p>
	<p>Select [1. PASSWORDS / LOCKOUTS].</p>
	<p>Enter owner password and press [ENTER].</p>
	<p>Select [3. HIGH FLOW]. OR Select [4. TWO-SPEED].</p>
	<p>HIGH FLOW Press user number to cycle between LOCKED and UNLOCKED.</p>
	<p>TWO-SPEED Press user number to cycle between LOCKED and UNLOCKED.</p>

NOTE: High-Flow and Two-Speed lockouts for the owner are active even if the Password Lockout feature is unlocked.

PASSWORD SETUP (KEYLESS START PANEL)

Password Description

Master Password:

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

Owner Password:

Allows for full use of the loader. Must be used to change the owner password.

Changing The Owner Password

Turn the key switch to the RUN position to turn on the loaders electrical system.

Enter the five digit owner password using the number keys (1 through 0) if locked.

Figure 291



Press and hold the lock (Item 1) and unlock (Item 2) [Figure 291] keys for 2 seconds.

The lock key red light will flash and the left panel display screen will show [ENTER].

Enter a new five digit owner password using the number keys (1 through 0). An asterisk will show in the left panel display screen for each key press.

The left panel display screen will show [AGAIN].

Enter the new five digit owner password again.

The lock key red light will become solid.

Password Lockout Feature

This feature allows the owner to unlock the password feature so that a password does not need to be used every time the engine is started.

Turn the key switch to the RUN position to turn on the loaders electrical system.

Enter the five digit owner password using the number keys (1 through 0).

Press the unlock key (Item 2) [Figure 291].

The left panel display screen will show [CODE].

Enter the five digit owner password using the number keys (1 through 0). The unlock key green light will flash, then become solid.

The loader can now be started without using a password.

NOTE: Use the following procedure to reset the machine lock so that the loader requires a password to start the engine.

Turn the key switch to the RUN position to turn on the loaders electrical system.

Press the lock key (Item 1) [Figure 291].

The lock key red light will flash and the left panel display screen will show [CODE].

Enter the five digit owner password using the number keys (1 through 0). The unlock key green light will flash, then the lock key red light will become solid.

You must now enter the password every time to start the loader.

Password Description

All new machines with a Deluxe Instrumentation Panel arrive at Bobcat dealerships with the keypad in locked mode. Locked mode means that a password must be used to start the engine.

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

Master Password:

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

Owner Password:

Allows for full use of the loader and to set up the Deluxe Instrumentation Panel. There is only one owner password. The owner password must be used to change the owner or user passwords. Owner should change the password as soon as possible for security of the loader.

User Password:

Allows starting and operating the loader; cannot change passwords or lockout features.

For the procedures to change passwords: (See Changing The Owner Password on Page 198.) and (See Changing The User Passwords on Page 199.)

Changing The Owner Password

	<p>Press a scroll button (Item 1) repeatedly until the Security screen icon (Inset) is highlighted.</p>
	<p>Select [1. PASSWORDS / LOCKOUTS].</p>
	<p>Enter owner password and press [ENTER].</p>
	<p>Select [1. USER SETTINGS].</p>
	<p>Select [1. OWNER].</p>
	<p>Select [2. CHANGE PASSWORDS].</p>
	<p>Enter new owner password and press [ENTER]. You will be prompted to reenter the new owner password.</p>

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Changing The User Passwords

	<p>Press a scroll button (Item 1) repeatedly until the Security screen icon (Inset) is highlighted.</p>
	<p>Select [1. PASSWORDS / LOCKOUTS].</p>
	<p>Enter owner password and press [ENTER].</p>
	<p>Select [1. USER SETTINGS].</p>
	<p>Select user.</p>
	<p>Select [2. CHANGE PASSWORD].</p>
	<p>Enter new user password and press [ENTER].</p>

Password Lockout Feature

This feature allows the owner to unlock the password feature so that a password does not need to be used every time the engine is started.

	<p>Press a scroll button (Item 1) repeatedly until the Security screen icon (Inset) is highlighted.</p>
	<p>Select [1. PASSWORDS / LOCKOUTS].</p>
	<p>Enter owner password and press [ENTER].</p>
	<p>Select [2. MACHINE LOCK].</p>

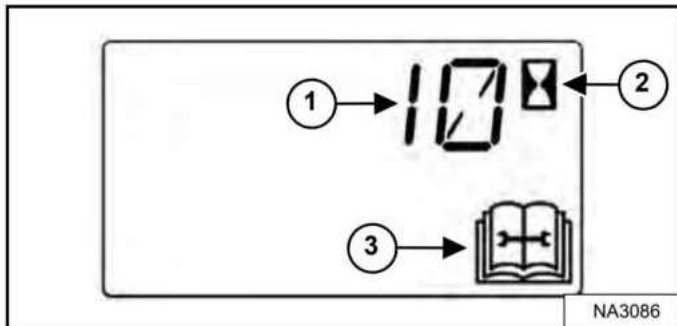
NOTE: The procedure above can be followed to reset the machine lock so that the machine requires a password to start the engine.

MAINTENANCE CLOCK

Description

The Maintenance Clock alerts the operator when the next service interval is due. *EXAMPLE:* The maintenance clock can be set to a 500 hour interval as a reminder for the next 500 hour planned maintenance.

Figure 292



During machine operation, a 2 beep alarm will sound when there are less than 10 hours until the next planned maintenance.

The remaining hours before maintenance is required (Item 1) will appear in the data display for 5 seconds while the service icon (Item 3) and the hourmeter icon (Item 2) [Figure 292] flash.

NOTE: The display will show negative numbers after counting down to zero.

The display will revert to the previous display and will appear for 5 seconds every time the machine is started until the maintenance clock is reset.

Figure 293



The Deluxe Instrumentation Panel (if equipped) will display a message (Item 1) [Figure 293] alerting the operator to service the machine.

This message will appear for 10 seconds every time the machine is started until the maintenance clock is reset.

Figure 294



The Deluxe Instrumentation Panel (if equipped) will display a bar (Item 1) [Figure 294] showing the time remaining until next service. This bar will turn red when service is past due. [NEXT MAINTENANCE DUE] will change to [MAINTENANCE PAST DUE] and display the number of hours past due.

Keys [4] and [9] can be used to adjust the service interval when the owner is logged in [Figure 294].

Setup

See your Bobcat dealer about installation of this feature.

Reset

See your Bobcat dealer to reset the maintenance clock.

SPECIFICATIONS

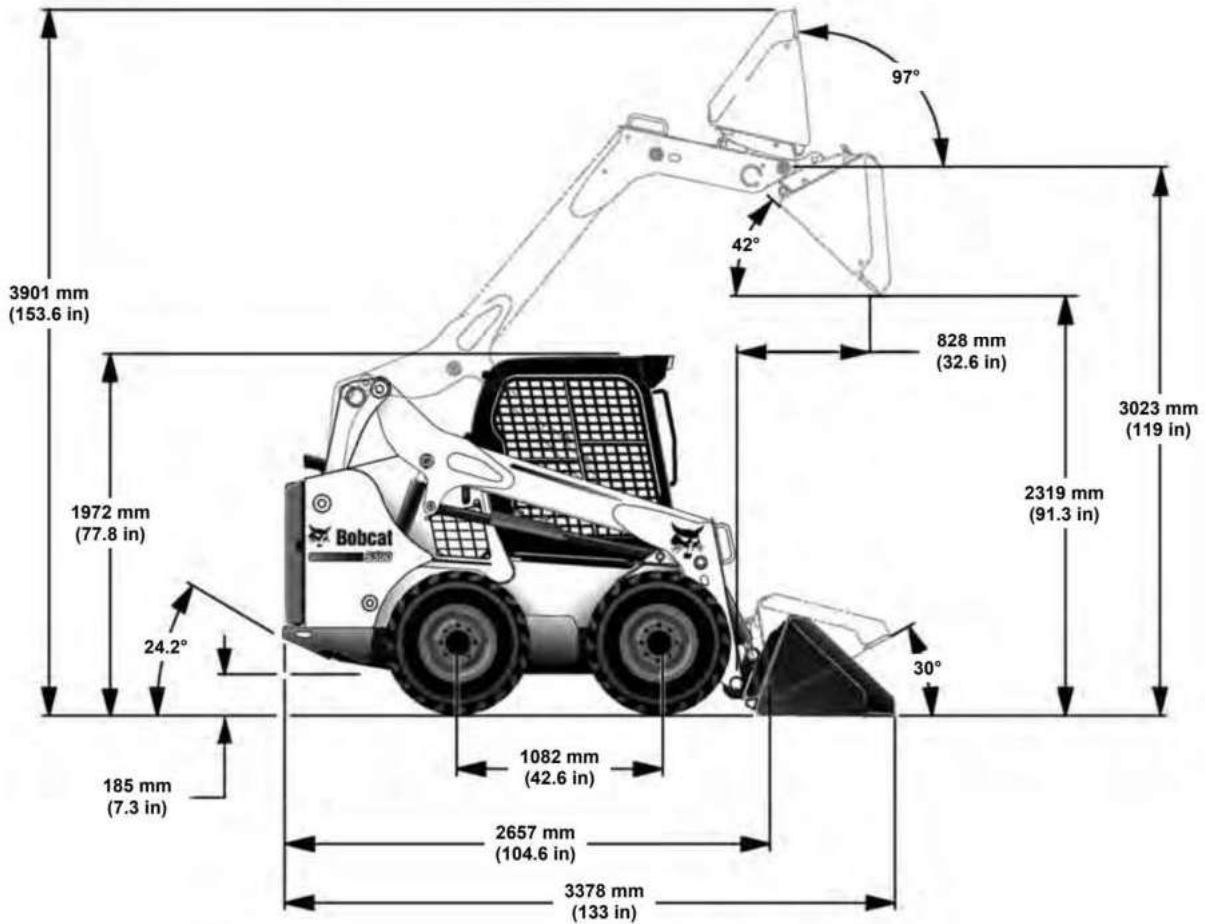
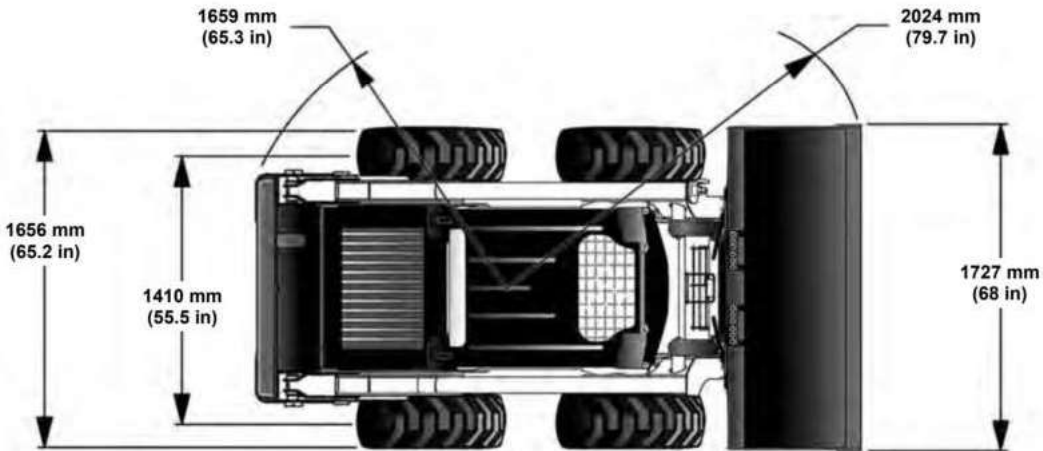
(S590) LOADER SPECIFICATIONS	202
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Certain specification(s) are based on engineering calculations and are not actual measurements. Specification(s) are provided for comparison purposes only and are subject to change without notice. Specification(s) for your individual Bobcat equipment will vary based on normal variations in design, manufacturing, operating conditions, and other factors.

(S590) LOADER SPECIFICATIONS

Machine Dimensions

- Dimensions are given for loader equipped with standard tyres and 68 in. Construction and Industrial bucket and may vary with other bucket types.
- Where applicable, specifications conform to SAE or ISO standards and are subject to change without notice.



NA9081

Changes of structure or weight distribution of the loader can cause changes in control and steering response, and can cause failure of the loader parts.

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(S590) LOADER SPECIFICATIONS (CONT'D)**Performance**

Rated Operating Capacity (ISO 14397-1)	998 kg (2200 lb)
with 200 Pound Frame Mounted Counterweight Kit (ISO 14397-1)	1066 kg (2350 lb)
Tipping Load (ISO 14397-1)	1995 kg (4400 lb)
Operating Weight	3054 kg (6735 lb)
Breakout Force - Lift	2059 kg (4540 lb)
Breakout Force - Tilt	1976 kg (4356 lb)
Push Force	2414 kg (5322 lb)
Travel Speed:	
- Single Speed Loader	0 - 11,8 km/h (0 - 7.35 mph)
- Two-Speed Loader (Option):	
Low Range	0 - 11,8 km/h (0 - 7.35 mph)
High Range	0 - 17,3 km/h (0 - 11.02 mph)

Engine

Make / Model	Kubota® / V2607-DI-TE3B Stage III A
Fuel / Cooling	Diesel / Liquid
Horsepower:	
- ISO 9249 EEC / SAE J1349 Net	45,5 kW (61.0 hp) @ 2700 rpm
- ISO 14396 Gross	48,5 kW (65.0 hp) @ 2700 rpm
- SAE J1995 Gross	49,2 kW (66.0 hp) @ 2700 rpm
Torque:	
- ISO 9249 EEC / SAE J1349 Net	211,0 N•m (155.6 ft-lb) @ 1425 rpm
- SAE J1995 Gross	218,0 N•m (161.0 ft-lb) @ 1425 rpm
Low Idle rpm	1175 - 1325
High Idle rpm	2760 - 2900
Number of Cylinders	4
Displacement	2600 cm ³ (158.7 in ³)
Bore / Stroke	87 mm / 110 mm (3.425 in / 4.33 in)
Lubrication	Gear Pump Pressure System with Filter
Crankcase Ventilation	Closed Breathing
Air Cleaner	Dry replaceable paper cartridge with separate safety element
Ignition	Diesel - Compression
Air Induction	Turbo-Charged
Engine Coolant	Propylene Glycol / Water Mixture
Starting Aid	Glow plugs automatically activated as needed in RUN position

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(S590) LOADER SPECIFICATIONS (CONT'D)**Drive System**

Main Drive	Fully hydrostatic, 4-wheel drive
Transmission	Infinitely variable tandem hydrostatic piston pumps, driving two fully reversing hydrostatic motors
Final Drive	Prestressed #80 HSOC endless roller chain (no master link) and sprockets in sealed chaincase with oil lubrication (Chains do not require periodic adjustments) Two chains per side with no idler sprocket
Axle Size	50,29 mm (1.98 in), heat treated
Wheel Bolts	Eight - 9/16 in. wheel bolts fixed to axle hubs

Controls

Machine Steering	Direction and speed controlled by two hand operated steering levers or optional joystick(s)
Loader Hydraulics: - Lift and Tilt - Front Auxiliary - Rear Auxiliary (Option)	Controlled by separate foot pedals or optional Advanced Control System (ACS) or optional Advanced Hand Controls (AHC) or optional Selectable Joystick Controls (SJC) Controlled by electrical switch on Right Hand steering lever or joystick Controlled by electrical switch on Left Hand steering lever or joystick
Auxiliary Pressure Release	Pressure relieved through quick couplers; Push couplers in, hold for 5 seconds
Engine	Hand operated speed control, additional foot operated speed control pedal with SJC option; key-type start switch or optional Keyless Start Panel or optional Deluxe Instrumentation Panel and function error shutdown
Service Brake	Two independent hydrostatic systems controlled by two hand operated steering levers or optional joystick(s)
Secondary Brake	One of the hydrostatic transmissions
Parking Brake	Mechanical disc activated by manually operated switch on left instrument panel

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(S590) LOADER SPECIFICATIONS (CONT'D)**Hydraulic System**

Pump Type	Engine driven, gear type
Pump Capacity - Standard-Flow	64,7 L/min (17.1 U.S. gpm)
Pump Capacity - High-Flow (Option)	101,1 L/min (26.7 U.S. gpm)
System Relief at Quick Couplers	23,8 - 24,5 MPa (238 - 245 bar) (3450 - 3550 psi)
Filter (Hydraulic / Hydrostatic)	Replaceable beta 10 micron = 200, drop in element
Filter (Charge)	Replaceable beta 10 micron = 200, spin-on element
Hydraulic Cylinders: Bore Diameter: Lift Cylinder (2) Tilt Cylinder (2) Rod Diameter: Lift Cylinder (2) Tilt Cylinder (2) Stroke: Lift Cylinder (2) Tilt Cylinder (2)	Double-acting; lift cylinders have cushioning feature on lower, tilt cylinders have cushioning feature on dump and rollback 69,9 mm (2.75 in) 69,9 mm (2.75 in) 41,4 mm (1.63 in) 38,1 mm (1.50 in) 540,0 mm (21.26 in) 330,7 mm (13.02 in)
Control Valve - Standard	3-Spool, open centre, manually operated with spring detent for lift float; Electrically controlled auxiliary spool
Control Valve - ACS, AHC, and SJC	3-Spool, open centre with electric actuator controlled lift with float and tilt; Electrically controlled auxiliary spool
Fluid Lines	SAE Standard tubelines, hoses, and fittings
Hydraulic Function Time: - Raise Lift Arms - Lower Lift Arms - Bucket Dump - Bucket Rollback	3.8 seconds 2.5 seconds 2.3 seconds 1.7 seconds

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(S590) LOADER SPECIFICATIONS (CONT'D)**Electrical System**

Alternator	Belt driven, 90 amperes, open frame
Battery	12 volt, 700 cold cranking amperes @ -18°C (0°F), 110 minute reserve capacity @ 25 amperes
Starter	12 volt, gear type, 2,7 kW (3.62 hp)
Instrumentation	<p style="text-align: center;">Gauges: Engine Coolant Temperature and Fuel Level</p> <p style="text-align: center;">Warning lights: Fuel Level, Seat Belt, Engine Coolant Temperature, Engine Malfunction, Hydraulic System Malfunction, Diesel Particulate Filter (DPF) / Diesel Exhaust Fluid (DEF), and General Warning</p> <p style="text-align: center;">Indicators: BICS™ Functions, Two-Speed, 3-Point Restraint, and Turn Signals</p> <p style="text-align: center;">Data Display: Operating Hours, Engine rpm, Speed Management Setting, Maintenance Clock Countdown, Battery Voltage, Service Codes, Engine Preheat Countdown, Lift and Tilt Compensation Setting, Steering Drift Compensation Setting, and Drive Response Setting</p> <p style="text-align: center;">Other: Audible Alarm, Lights, and Option / Accessory Switches</p> <p style="text-align: center;">Optional Deluxe Instrumentation Panel: *Additional displays for: Engine rpm, Engine Coolant Temperature, Engine Oil Pressure, System Voltage, Hydraulic Fluid Temperature, and Hydrostatic Charge Pressure</p> <p style="text-align: center;">*Additional Features Included: Keyless Start, Digital Clock, Job Clock, Password Lockout, Multiple-Language Display, Help Screens, Diagnostic Capability, and Engine / Hydraulic Systems Shutdown Function</p>

Capacities

Fuel	93,7 L (24.75 U.S. gal)
Engine Oil with Filter Change	9,7 L (10.25 qt)
Engine Cooling System:	
- with Heater	11,7 L (3.1 U.S. gal)
- without Heater	11,4 L (3.0 U.S. gal)
Hydraulic / Hydrostatic Reservoir	7,57 L (2.0 U.S. gal)
Hydraulic / Hydrostatic System	36,0 L (9.5 U.S. gal)
Chaincase Reservoir	32,2 L (8.5 U.S. gal)
Air Conditioning Refrigerant (R-134a)	0,9 kg (2.0 lb)

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(S590) LOADER SPECIFICATIONS (CONT'D)**Tyres**

Super Float (Standard)	31 x 12 - 16.5, 10 Ply Rating
Heavy Duty (Option)	10.00 - 16.5, 10 Ply Rating
Heavy Duty Offset (Option)	10.00 - 16.5, 10 Ply Rating
Heavy Duty Offset Poly Fill (Option)	10.00 - 16.5, 10 Ply Rating
Severe Duty (Option)	10.00 - 16.5, 10 Ply Rating
Severe Duty Poly Fill (Option)	10.00 - 16.5, 10 Ply Rating
Recommended Pressure	Inflate tyres to MAXIMUM pressure shown on the sidewall of the tyre; DO NOT mix brands of tyres used on the same loader

Environmental

DECLARED SINGLE-NUMBER NOISE EMISSION VALUES In accordance with ISO 4871	
Noise level per Directive 2000/14/EC — L_{WA}	101 dB
Operator noise level per Directive 2006/42/EC — L_{pA}	85 dB

DECLARED VIBRATION EMISSION VALUES In accordance with EN 12096		
	Value	Uncertainty
Whole-body vibration per ISO 2631-1	0,70 m/s^2	0,35 m/s^2
Hand-arm vibration per ISO 5349-1	0,84 m/s^2	---

Machine equipped with optional HVAC (air condition) contains fluorinated greenhouse gas (F-gas)	
F-gas type	HFC-134a
F-gas mass (kg)	0.91
CO2 equivalent (t)	1.30
GWP	1430

Temperature Range

Operation and storage	-26 - +43°C (-15 - +110°F)
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Dealer Conv -- Not for Resale

WARRANTY

WARRANTY209

WARRANTY

BOBCAT LOADERS

Doosan Bobcat EMEA s.r.o. ("Doosan") warrants to its authorized dealers who in turn warrants to the customer that each new Bobcat Loader will be free from defects in material and workmanship for twelve (12) months from the date of delivery to the customer or 2000 hours of machine usage, whichever occurs first. During the warranty period, the authorized Doosan dealer shall repair or replace, at Doosan's option, without charge for parts, labour and travel of technicians, any part of the Doosan product which fails because of defects in material or workmanship. The customer shall provide the authorized Doosan dealer with prompt written notice of the defect and allow reasonable time for replacement or repair. Doosan may, at its option, request failed parts to be returned to the factory or to any other designated location. Transportation of the Doosan product to the authorized Doosan dealer for warranty work is not the responsibility of Doosan. Service schedules must adhere to prescribed intervals and Bobcat genuine parts/lubricants must be used. The warranty does not apply to tyres, tracks or other accessories not manufactured by Doosan. For coverage on engines, consult with your Bobcat Dealer. For these non-covered items, the customer shall refer solely to the warranty, if any, of the respective manufacturers thereof, in accordance with the respective manufacturers warranty statement. Some Doosan parts are covered pro-rata depending on the expected life-time of the part. Coverage for batteries, air-conditioning refill, couplers and ignition system parts (glow plugs, fuel injection pumps, injectors) is reduced as failures generally originate from factors not under Doosan's control such as, but not limited to, prolonged storage, abuse or fuel quality. Reduced coverage is, depending on the component, limited from 50 to 500 operating hours. The warranty does not cover: (i) Oils and lubricants, coolant fluids, filter elements, brake linings, tune-up parts, bulbs, fuses, alternator fan belts, drive belts, pins, bushings and other high-wear items. (ii) Damages resulting from abuse, accidents, alterations, use of the product with any bucket or attachment not approved by Doosan, air flow obstructions, or failure to maintain or use the Doosan product according to the instructions applicable to it. (iii) Ground engaging parts such as bucket teeth and cutting edges. (iv) Fuel or hydraulic system cleaning, engine tune-up, brake inspection or adjustment. (v) Adjustments or slight defects which generally do not affect the stability or reliability of the machine.

DOOSAN EXCLUDES OTHER CONDITIONS, WARRANTIES OR REPRESENTATIONS OF ALL KINDS, EXPRESSED OR IMPLIED, STATUTORY OR OTHERWISE (EXCEPT THAT OF TITLE) INCLUDING ALL IMPLIED WARRANTIES AND CONDITIONS RELATING TO MERCHANTABILITY, SATISFACTORY QUALITY AND FITNESS FOR A PARTICULAR PURPOSE. CORRECTIONS BY DOOSAN OF NONCONFORMITIES WHETHER PATENT OR LATENT, IN THE MANNER AND FOR THE TIME PERIOD PROVIDED ABOVE, SHALL CONSTITUTE FULFILLMENT OF ALL LIABILITIES OF DOOSAN FOR SUCH NONCONFORMITIES, WHETHER BASED ON CONTRACT, WARRANTY, TORT, NEGLIGENCE, INDEMNITY, STRICT LIABILITY OR OTHERWISE WITH RESPECT TO OR ARISING OUT OF SUCH PRODUCT. THE REMEDIES OF THE END-USER/OWNER SET FORTH UNDER THE PROVISIONS OF THE WARRANTY OUTLINED ABOVE ARE EXCLUSIVE AND THE TOTAL LIABILITY OF DOOSAN INCLUDING ANY HOLDING, SUBSIDIARY, ASSOCIATED OR AFFILIATED COMPANY OR DISTRIBUTOR WITH RESPECT TO THIS SALE OR THE PRODUCT AND SERVICE FURNISHED HEREUNDER IN CONNECTION WITH THE PERFORMANCE OR BREACH THEREOF, OR FROM DELIVERY, INSTALLATION, REPAIR OR TECHNICAL DIRECTION COVERED BY OR FURNISHED UNDER THIS SALE, WHETHER BASED ON CONTRACT, WARRANTY, TORT, NEGLIGENCE, INDEMNITY, STRICT LIABILITY OR OTHERWISE SHALL NOT EXCEED THE PURCHASE PRICE OF THE PRODUCT UPON WHICH SUCH LIABILITY IS BASED. DOOSAN INCLUDING ANY HOLDING, SUBSIDIARY, ASSOCIATED OR AFFILIATED COMPANY AND DISTRIBUTOR SHALL IN NO EVENT BE LIABLE TO THE END-USER/OWNER, ANY SUCCESSORS IN INTEREST OR ANY BENEFICIARY OR ASSIGNEE RELATING TO THIS SALE FOR ANY CONSEQUENTIAL, INCIDENTAL, INDIRECT, SPECIAL OR PUNITIVE DAMAGES ARISING OUT OF THIS SALE OR BY ANY BREACH THEREOF, OR ANY DEFECT IN, OR FAILURE OF, OR MALFUNCTION OF THE PRODUCT UNDER THIS SALE, WHETHER BASED UPON LOSS OF USE, LOST PROFITS OR REVENUE, INTEREST, LOST GOODWILL, WORK STOPPAGE, IMPAIRMENT OF OTHER GOODS, LOSS BY REASON OF SHUTDOWN OR NON-OPERATION, INCREASED EXPENSES OF OPERATION OR CLAIMS OF USER OR CUSTOMERS OF THE USER FOR SERVICE INTERRUPTION WHETHER OR NOT SUCH LOSS OR DAMAGE IS BASED ON CONTRACT, WARRANTY, TORT, NEGLIGENCE, INDEMNITY, STRICT LIABILITY OR OTHERWISE.



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