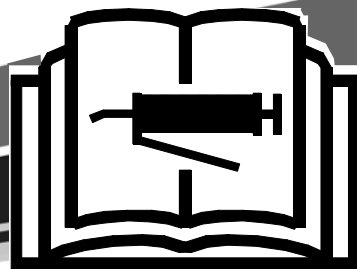


# ***BC1000XL Brush Chipper***

---

## ***Maintenance Manual***



BC1000XL\_m6\_09  
Serial No. 15079 -  
Order No. 105400BD4



**Vermeer®**

**EQUIPPED TO  
DO MORE.™**

# INTRODUCTION

This manual explains the proper operation of your machine. Study and understand these instructions thoroughly before operating or maintaining the machine. Failure to do so could result in personal injury or equipment damage. Consult your Vermeer dealer if you do not understand the instructions in this manual, or need additional information.

The instructions, illustrations, and specifications in this manual are based on the latest information available at time of publication. Your machine may have product improvements and features not yet contained in this manual.

The maintenance intervals are based on normal operating conditions. When operating under severe conditions, the maintenance intervals should be shortened.

To provide a better view, some photographs or illustrations in the maintenance sections may show the machine shields removed. **Never operate the machine with the shields removed - keep all shields in place.** If removing a shield is necessary, return it to its operating position before operating the machine.

Vermeer Corporation reserves the right to make changes at any time without notice or obligation.

This manual is supplied with each machine. Refer to it for all lubrication and maintenance procedures. Keep this manual with the machine for ready reference. Store it in a protected location when not in use.

Additional copies of the manuals, and Operations and Safety video, are available from your dealer. Reorder numbers are listed on the front covers of the manuals and on the video.

Copies of this manual, and the Operations and Safety video, are available in Spanish from your dealer. Other languages may be available.

Su distribuidor dispone de ejemplares en español de este manual y del vídeo de Operaciones y Seguridad.

## NOTICE TO OWNER

You are requested to notify Vermeer Corporation when you have purchased a **used** Vermeer machine. Notify the Customer Data Department by telephone: 800-829-0051 or 641-628-3141; email: [customerdata@vermeer.com](mailto:customerdata@vermeer.com); internet: [www.vermeer.com](http://www.vermeer.com) or [www.vermeerag.com](http://www.vermeerag.com); or, letter: Customer Data Dept., Vermeer Corporation, PO Box 200, Pella IA 50219 USA. Upon request, an owner of a used Vermeer machine will receive one free set of Operator's, Maintenance and Parts manuals.

## **SERVICE**

Service instructions are contained in a separate service manual. Service manuals can be obtained by contacting your Vermeer dealer. If you are considering servicing the machine without the assistance of a Vermeer dealer, remember this is a complex machine which often involves complex service procedures.

There are also many components which are not user-serviceable. Do not attempt any service which you do not fully understand, nor any service that you cannot do accurately and safely with proper tools and equipment. If you encounter a problem that you do not understand or cannot solve, contact your Vermeer dealer.

## **TRADEMARKS**

**VERMEER**, **VERMEER** Logo and **ECOIDLE** are trademarks of Vermeer Manufacturing Company.

**GM** is a trademark of General Motors Corporation.

**DEUTZ** is a trademark of Kockner-Homboldt-Deutz.

**CATERPILLAR** is a trademark of Caterpillar, Inc.

**CUMMINS** is a trademark of Cummins Engine Co., Inc.

This page intentionally left blank.

# Table of Contents

## **Safety Messages . . . . . 10-1**

Safety Symbol Explanation . . . . . 10-1

## **Shutdown Procedure . . . . . 15-1**

Stopping the Machine . . . . . 15-1

Quick Stop Procedure . . . . . 15-2

Reset Remote Control Engine Stop (Option) . . . . . 15-2

## **Maintenance - 5 Service Hours . . . . . 20-1**

Cutter Drum Bearings . . . . . 20-1

Drive Sheave Bearing . . . . . 20-2

## **Maintenance - 10 Service Hours . . . . . 25-1**

Machine - Grease . . . . . 25-1

Engine Maintenance . . . . . 25-1

Engine Systems - Check/Inspect . . . . . 25-1

Oil Level Check- (Deutz/Caterpillar) . . . . . 25-2

Oil Level Check - (Cummins/GM) . . . . . 25-3

Engine Cooling System (Deutz) - Check . . . . . 25-4

Engine Cooling System (Caterpillar/GM) - Check . . . . . 25-5

Engine Cooling System (Cummins) - Check . . . . . 25-6

Hydraulic Fluid Level - Check . . . . . 25-7

Fuel Tank Fill - (Caterpillar/Cummins/Deutz) . . . . . 25-8

Fuel Tank Fill - (GM) . . . . . 25-9

Fuel Pre-Filter - Drain (Deutz) . . . . . 25-10

Fuel/Water Separator - Drain (Cummins) . . . . . 25-11

Air Cleaner Restriction Indicator-Check (Deutz/GM) . . . . . 25-12

Air Cleaner Restriction Indicator - Check  
(Cummins/Caterpillar) . . . . . 25-13

Hydraulic Surge Brake (Standard BC1000XL Option)  
Fluid Level - Check . . . . . 25-14

Hydraulic Surge Brakes (Standard BC1000XL Option) -  
Check Function . . . . . 25-14

Brake System - Check (Standard) . . . . . 25-15

Brake System - Check (BC1000XL European) . . . . . 25-16

Electric Brakes - Test . . . . . 25-16

Cutter Drum Drive Belt Tension - Initial Check . . . . . 25-17

Wheel Lug Nut Torque - Initial Check . . . . . 25-17

Pintle Hitch - Check . . . . . 25-17

Knife/Drum Maintenance . . . . . 25-18

Knife Removal . . . . . 25-18

Knife Inspection . . . . . 25-20

Bolt Inspection . . . . . 25-21

Knife Mount Surface Inspection . . . . . 25-22

Drum Inspection . . . . . 25-23

Knife Sharpening . . . . . 25-24

Knife Installation . . . . . 25-25

Feed Roller Controls - Check . . . . . 25-27

Upper Feed Control Bar . . . . . 25-27

Lower Feed Stop Bar and Side Feed Stop Bars . . . . . 25-28

Remote Control Beacon - Check (Option) . . . . . 25-29

## **Maintenance - 50 Service Hours . . . . . 30-1**

Engine Maintenance . . . . . 30-1

Hydraulic Fluid Filter - Initial Replacement . . . . . 30-1

Machine Components - Inspect .....	30-1
Engine Oil and Filter - Initial Change/Replace (Deutz) .....	30-2
Shear Bar Mounting Hardware - Check .....	30-2
Cutter Drum Drive Belt Tension - Check/Adjust .....	30-3
Cutter Drum Drive Belt Tension - Adjust .....	30-4
Belt Drive Pivots - Grease .....	30-5
Belt Drive U-Joints - Grease .....	30-6
Feed Roller Arm Pivots - Grease .....	30-7

## **Maintenance - 100 Service Hours ..... 35-1**

Engine Maintenance - (Caterpillar) .....	35-1
Engine Oil and Filter - Change/Replace (Caterpillar) .....	35-1
Machine Components - Inspect .....	35-2
Safety Signs - Maintain .....	35-2
Hydraulic System - Check .....	35-3
Hydraulic Tank - Keep Clean .....	35-3
Tires and Rims - Check .....	35-4
Remote Control Engine Stop - Check (Option) .....	35-4
Upper Feed Control Bar Force - Check/Adjust .....	35-5
Lower Feed Stop Bar Switch - Check/Adjust (BC1000XL Only) .....	35-6
Lower Feed Stop Bar Switch - Check/Adjust (BC1000XL European Only) .....	35-9
Side Feed Stop Bars (BC1000XL European Only) .....	35-11

## **Maintenance - 200 Service Hours ..... 40-1**

Engine Oil and Filter - Change/Replace (GM) .....	40-1
---------------------------------------------------	------

## **Maintenance - 250 Service Hours ..... 45-1**

Engine Maintenance .....	45-1
Engine Oil and Filter - Change/Replace (Cummins) .....	45-1
Fuel Filters - Replace (Deutz) .....	45-2
Fuel Filter - Replace (GM) .....	45-3
Fuel Filters - Replace (Cummins) .....	45-4
Jack - Lubricate .....	45-5
Cutter Belt Wear - Check .....	45-5
Hydraulic Fluid Filter - Replace .....	45-6
Automatic Brake Controller with Manual Override (Optional) - Check .....	45-7
Brake Controller - Adjust .....	45-7
Brakes - Adjust 5200 Lb/7000 Lb Dexter Axle .....	45-8
Brakes-(Dexter 5200 Lb Axle Nev-R-Adjust) .....	45-8
Brakes - Adjust (European Knott Axle) .....	45-9
Park Brake - Adjust (European Knott Axle) .....	45-10
Wheel Bearings - Grease (Dexter 5200 lb/7000 lb Axle EZ-Lube) .....	45-11

## **Maintenance - 500 Service Hours ..... 50-1**

Engine Maintenance - (Deutz) .....	50-1
Engine Maintenance - (Caterpillar) .....	50-1
Engine Maintenance - (Cummins) .....	50-2
Engine Maintenance - (GM) .....	50-2
Engine Oil and Filter - Change/Replace (Deutz) .....	50-3
Fuel Filters - Replace (Caterpillar) .....	50-4
Air Cleaner Elements - Replace (Deutz/Cummins/GM) .....	50-5
Air Cleaner Elements - Replace (Caterpillar) .....	50-6
Ball Coupler - Lubricate and Inspect .....	50-7
Hydraulic Fluid - Change .....	50-8

Hydraulic Fluid Strainer - Inspect . . . . .	50-9
Battery Electrolyte Levels and Terminals - Check/Clean. . . . .	50-10
Battery Electrolyte Levels and Terminals - Check . . . . .	50-11
Battery Terminals - Clean . . . . .	50-12
Feed Table Curtains - Replace . . . . .	50-13
Cutter Drum Drive Belt - Replace . . . . .	50-14
<b>Maintenance - 1000 Service Hours . . . . .</b>	<b>55-1</b>
Engine Maintenance And System Check. . . . .	55-1
Surge Brake Actuator - Grease (European Only) . . . . .	55-1
Park Brake Lever - Grease (European Only) . . . . .	55-2
Battery - Replace . . . . .	55-2
Cooling System - Drain and Clean. . . . .	55-4
<b>Additional Engine Maintenance . . . . .</b>	<b>60-1</b>
Engine Maintenance - 2000 Service Hours . . . . .	60-1
Engine Maintenance - 3000 Service Hours . . . . .	60-1
Additional Periodic Engine Maintenance . . . . .	60-2
Maintenance - 6000 Service Hours . . . . .	60-2
Maintenance - 12000 Service Hours . . . . .	60-2
<b>Maintenance - As Required . . . . .</b>	<b>65-1</b>
Engine Maintenance . . . . .	65-1
Engine Area - Clean . . . . .	65-1
Engine Systems - Check . . . . .	65-1
Wheel Bearings - Grease/Repack (Dexter 5200 lb/7000 lb Axle EZ-Lube) . . . . .	65-2
Air Cleaner - Inspect . . . . .	65-4

## BC1000XL Brush Chipper Maintenance

Propane Cylinder - Remove and Install (GM Dual Fuel Option) . . . . .	65-5
General Propane Safety Information . . . . .	65-5
Propane Fuel Filter - Replace (GM Dual Fuel Option) . . . . .	65-7
Knife-Mounting Surface - Inspect . . . . .	65-8
Shear Bar - Check/Adjust . . . . .	65-8
Shear Bar - Replace . . . . .	65-10
Highway Lights - Replace . . . . .	65-12
SmartFeed System Fuse - Replace . . . . .	65-12
Slip Hook - Replace. . . . .	65-13
Towing Chain - Replace . . . . .	65-13
Remote Control Battery - Replace (Option) . . . . .	65-14
Storage. . . . .	65-15
Preparing for Storage. . . . .	65-15
Removing from Storage . . . . .	65-15

## Troubleshooting . . . . . 70-1

Power System . . . . .	70-1
Drive System . . . . .	70-2
Electrical System. . . . .	70-3
Hydraulic System . . . . .	70-4
Remote Control (Optional) . . . . .	70-5

## Specifications . . . . . 75-1

Lubricants . . . . .	75-1
Machine Specifications . . . . .	75-4

This page intentionally left blank.



# Section 10: Safety Messages

General safety messages appear in this Safety Messages section. Specific safety messages are located in appropriate sections of the manual where a potential hazard may occur if the instructions or procedures are not followed.

A signal word “**DANGER**”, “**WARNING**”, or “**CAUTION**” is used with the safety alert symbol.

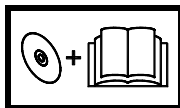
Safety signs with signal word “**DANGER**”, “**WARNING**”, or “**CAUTION**” are located near specific hazards.

<b>DANGER</b>	Indicates a hazardous situation that, if not avoided, will result in death or serious injury.
<b>WARNING</b>	Indicates a hazardous situation that, if not avoided, could result in death or serious injury.
<b>CAUTION</b>	Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury.

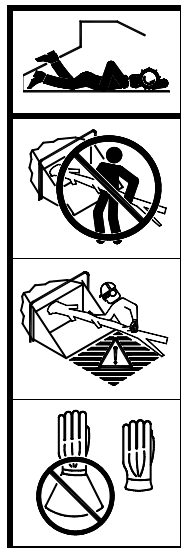
## SAFETY SYMBOL EXPLANATION



This is the safety alert symbol. This symbol is used in combination with an exclamation mark or other symbols to alert you to the potential for bodily injury or death.



**WARNING:** Read Operator’s Manual and safety signs, and watch the operations and safety video, before operating machine.

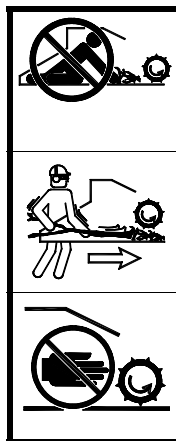


**DANGER:** Limbs can snag clothing. Roller or blades can grab and pull you in faster than you can let go of limb. Cutting injury or death will result.

Feed material only from side of feed table.

Feed base of limb or branch first.

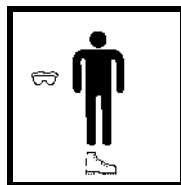
Wear gloves with narrow tight-fitting cuffs.



Never climb onto feed table.

Use wood object to push short material.

Keep away from rotating feed roller and blades.

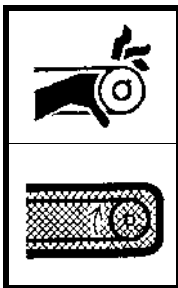


**WARNING:** Wear personal protective equipment. Dress properly.



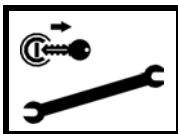
**WARNING:** Exhaust fumes can be fatal.

If operating in an enclosed area, remove exhaust fumes with an exhaust pipe extension to the outside.



**WARNING:** Moving parts can crush fingers.

Close all shields before starting.



**WARNING:** Use Shutdown Procedure before servicing, cleaning, repairing or transporting machine. Follow [Shutdown Procedure](#), page 15-1.



**WARNING:** Make no modifications to this equipment unless specifically recommended by Vermeer Corporation.



**WARNING:** Be sure that all safety devices, including shields, are installed and functioning properly after servicing the machine.



**WARNING:** Failure to follow any of the preceding safety instructions or those that follow within this manual, could result in serious injury or death. This machine is to be used only for those purposes for which it was intended as explained in the Operator's Manual.

---

# Section 15: Shutdown Procedure

## STOPPING THE MACHINE

**NOTICE:** For your safety and the safety of others, use shutdown procedure before working on the machine for any reason, including servicing, cleaning, unclogging, inspecting, or transporting the chipper.

A variation of this procedure may be used if so instructed within this manual, or if an emergency requires it.

**Step 1:** Return *Upper Feed Control Bar* to stop position.

**Step 2:** Place *Cutter Engage/Throttle Lever* in the ENGAGED/LOW RPM position.

- Whenever practical and consistent with good safety practice, run engine without load for a few minutes before shutting it off. This allows engine temperatures to decrease and equalize, which will increase engine life.

**Step 3:** Wait for the cutter drum to slow.

**Step 4:** Place *Cutter Engage/Throttle Lever* in the DISENGAGED/LOW RPM position.

**Step 5:** If so equipped, shut off remote control if in use.

**Step 6:** Turn ignition key to OFF position.

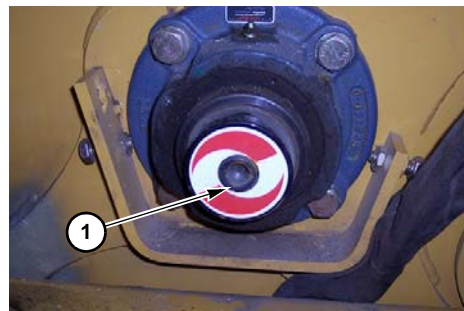
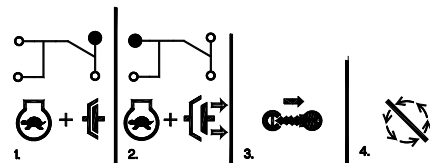
**Step 7:** Wait for the cutter drum and belt to stop.

**NOTICE:** Cutter drum rotation can be checked by looking at the end of the shaft (1) on the left side of the cutter wheel housing.

The cutter drum will continue to turn for a short time after the engine has stopped.

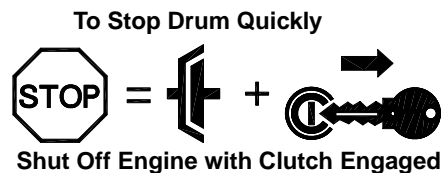
**Step 8:** Remove ignition key.

**Step 9:** Close and latch feed table.



## Quick Stop Procedure

- Step 1:** Turn ignition to the OFF position while cutter drum clutch is still engaged.  
Remove key.
- Step 2:** Wait for cutter drum and belt to stop.
- Step 3:** Fully disengage cutter drum.



## RESET REMOTE CONTROL ENGINE STOP (OPTION)

*If Engine Stop Button on remote control is pushed during operation:*

**NOTICE:** Use of remote control *Engine Stop Button* will trigger fault codes to show on engine information display. Cycling ignition key will clear fault codes.

- Step 1:** Turn ignition key to OFF position.
- Step 2:** If applicable, remove or correct the cause for stopping the machine.
- Step 3:** Refer to [Starting Procedure](#) in the [Operator's Manual](#). Select Remote Control mode at *Remote Control / Console Selector Switch*. Refer to Remote Control/Selector in [Controls](#) section of the [Operator's Manual](#).

Follow remote control enable instructions. Refer to [Remote Control](#) section in the [Operator's Manual](#).

# Section 20: Maintenance - 5 Service Hours

## CUTTER DRUM BEARINGS

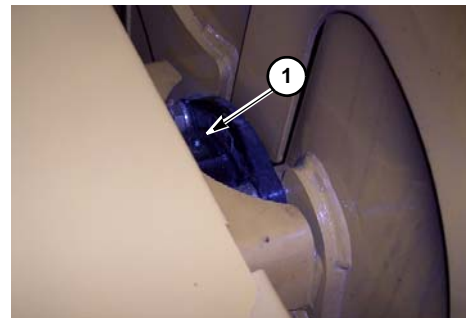
(1) Purge with grease ..... two fittings

*To ensure grease will be evenly distributed in bearing:*

**Step 1:** Disengage cutter drum belt drive.

**Step 2:** Shut off engine.

**Step 3:** Grease when cutter drum has almost stopped turning.



**Drive Sheave Bearing**

- (1) Purge with grease..... two fittings





# Section 25: Maintenance - 10 Service Hours

## MACHINE - GREASE

As a general rule, grease machine after it is shut down for the day. This protects metal under seals from corrosion caused by condensation as temperature drops.

Ensure all fittings and nozzle of grease applicator are clean before applying grease. If any grease fittings are missing, replace them immediately.

## ENGINE MAINTENANCE

- Check engine oil level.
- Check coolant level.
- Check for leaks.
- Inspect air cleaner restriction indicator.
- Check/clean engine air precleaner.
- Inspect engine systems for leaks, loose or damaged parts, any change in appearance.
- Drain fuel water filter/separator (fuel pre-filter).
- Check exhaust system including aftertreatment components for leaks.

Refer to the Engine Operation Manual supplied with the machine for instructions.

## Engine Systems - Check/Inspect

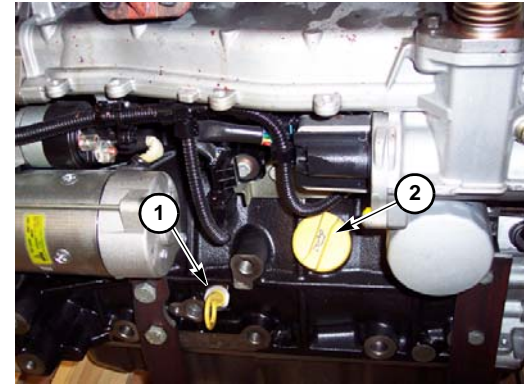
Inspect engine systems for leaks, loose or damaged parts, any change in appearance. Check external surfaces of engine. Ensure they are clean and not blocked.

## Oil Level Check- (Deutz/Caterpillar)

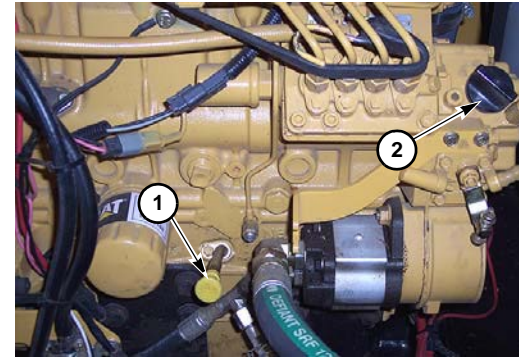
With engine level, check engine crankcase oil level at dipstick (1). Fill at fill cap (2); fill to full mark on dipstick. Do not overfill. (Refer to the Engine Operation Manual.)

**NOTICE:** Keep engine oil fill cap (2) tight and dipstick (1) in place while engine is running.

- Wait at least 15 minutes after shutting off engine to check oil. This allows time for the oil to drain into the oil pan.
- Engine is equipped with oil pressure and coolant temperature sensing switches. When oil pressure decreases below an acceptable level or coolant temperature exceeds an acceptable level, the engine will shut off.
- Keep engine oil fill cap (2) tight and dipstick (1) in place while engine is running.



Deutz



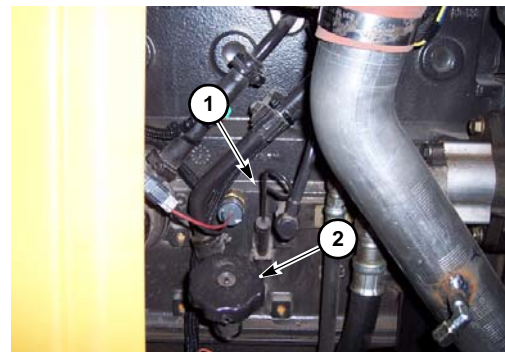
Caterpillar

## Oil Level Check - (Cummins/GM)

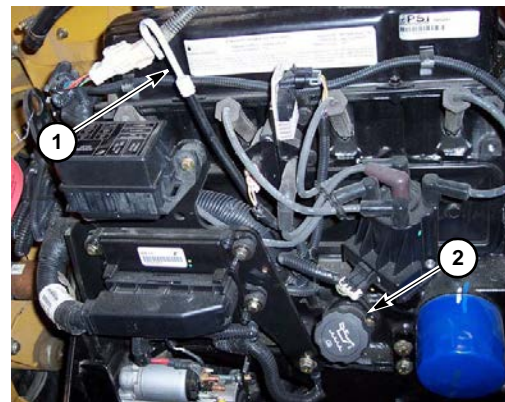
With engine level, check engine crankcase oil level at dipstick (1). Fill at fill cap (2); fill to full mark on dipstick. Do not overfill. (Refer to the Engine Operation Manual.)

**NOTICE:** Keep engine oil fill cap (2) tight and dipstick (1) in place while engine is running.

- Wait at least 15 minutes after shutting off engine to check oil. This allows time for the oil to drain into the oil pan.
- Engine is equipped with oil pressure and coolant temperature sensing switches. When oil pressure decreases below an acceptable level or coolant temperature exceeds an acceptable level, the engine will shut off.
- Keep engine oil fill cap (2) tight and dipstick (1) in place while engine is running.

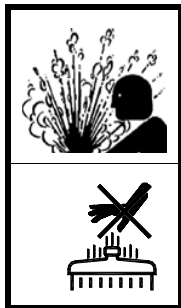


Cummins



GM

## Engine Cooling System (Deutz) - Check



**WARNING:** Hot fluid under pressure can erupt and scald if opened.

Allow to cool before opening.

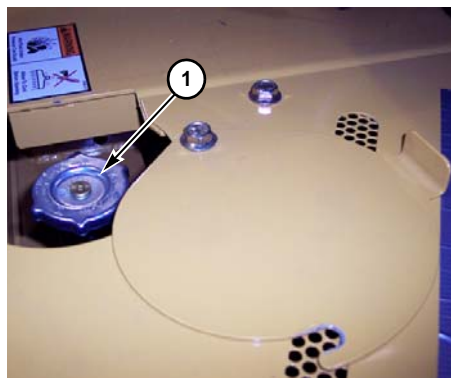
- Check coolant level.

Coolant system uses an Extended Life (ELC) Nitrite (NF) coolant and distilled or deionized water mixture. Remove radiator cap (1) and fill to bottom of radiator full neck.

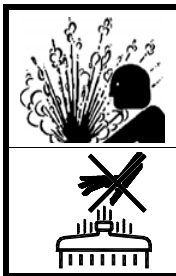
**NOTICE:** This machine was factory filled with a 50/50 mixture of Shell Rotella ELC NF (Extended Life Nitrite Free) coolant. Compatible coolants include Chevron Delo ELC NF and Exxon Mobil Delvac ELC NF. Never add pure antifreeze to the system; always dilute to a 50/50 mixture.

Engine is equipped with coolant temperature sensor. When coolant temperature exceeds an acceptable level, the engine will shut down.

- Inspect hose clamps and overflow tubes.
- Check/clean grill, radiator and fins.
- Check fan for cracks, loose rivets, and bent or loose blades.



## Engine Cooling System (Caterpillar/GM) - Check



**WARNING:** Hot fluid under pressure can erupt and scald if opened.

Allow to cool before opening.

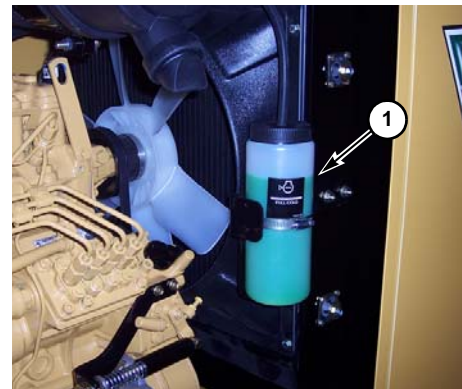
- Check coolant level.

Coolant system uses an Extended Life (ELC) Nitrite (NF) coolant and distilled or deionized water mixture. Fill to the coolant level mark on the coolant overflow recovery bottle (1).

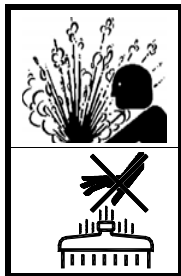
**NOTICE:** This machine was factory filled with a 50/50 mixture of Shell Rotella ELC NF (Extended Life Nitrite Free) coolant. Compatible coolants include Chevron Delo ELC NF and Exxon Mobil Delvac ELC NF. Never add pure antifreeze to the system; always dilute to a a 50/50 mixture.

Engine is equipped with coolant temperature sensor. When coolant temperature exceeds an acceptable level, the engine will shut off.

- Inspect hose clamps and overflow tubes.
- Check/clean grill, radiator and fins.
- Check fan for cracks, loose rivets, and bent or loose blades.



## Engine Cooling System (Cummins) - Check



**WARNING:** Hot fluid under pressure can erupt and scald if opened.

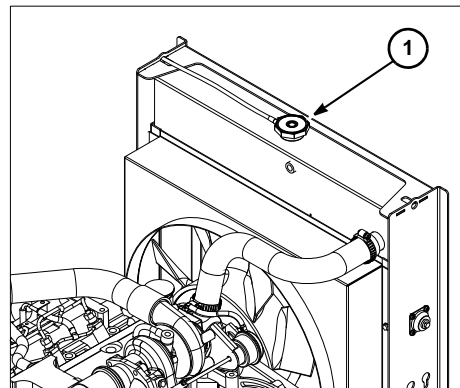
Allow to cool before opening.

- Check coolant level.

Fill to within 1/2" (13 mm) of the bottom of the fill pipe **(1)** with an Extended Life (ELC) Nitrite (NF) coolant and distilled or deionized water mixture.

**NOTICE:** This machine was factory filled with a 50/50 mixture of Shell Rotella ELC NF (Extended Life Nitrite Free) coolant. Compatible coolants include Chevron Delo ELC NF and Exxon Mobil Delvac ELC NF. Never add pure antifreeze to a cooling system; always dilute to a 50/50 mixture.

- Inspect hose clamps and overflow tubes.
- Check/clean grill, radiator and fins.
- Check fan for cracks, loose rivets, and bent or loose blades.

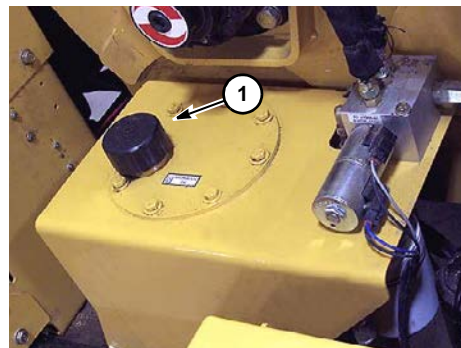


## HYDRAULIC FLUID LEVEL - CHECK

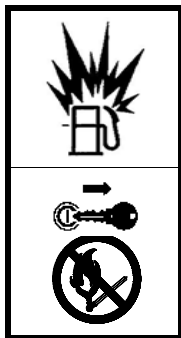
Clean hydraulic fluid is very important. Do not spill dirt or other contaminants into the tank. Filter all hydraulic fluid through a 10-micron filter before adding it to the tank.

Pull fill/check cap (1) off. Hydraulic fluid level must be between the two lines on the dipstick located beneath cap. Refer to “Lubricants,” [page 75-1](#). Push cap back on until fully seated.

The hydraulic fluid must be free of bubbles. Bubbles indicate trapped air in the hydraulic system.



## FUEL TANK FILL - (CATERPILLAR/CUMMINS/DEUTZ)



**WARNING:** Fuel and fumes can explode and burn.

Shut off engine before refueling. No flame. No smoking.

### (1) Fill Cap

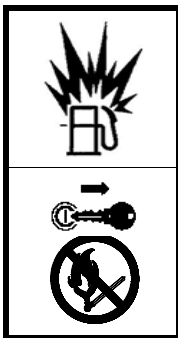
Fill tank at the end of each day to prevent condensation. Do not fill tank to the very top; leave room for expansion.

**NOTICE:** Use Ultra Low Sulfur Diesel with sulfur content less than 15 ppm for machines equipped with Tier 4 Interim/Final Stage IIIB engines.





## FUEL TANK FILL - (GM)



**WARNING:** Fuel and fumes can explode and burn.

Shut off engine before refueling. No flame. No smoking.

### (1) Fill Cap Cover

### (2) Fill Cap

**NOTICE:** Use only high quality unleaded gasoline. E10 fuel may be used.

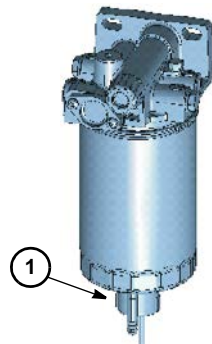
- Fill tank at the end of each day to prevent condensation.
- Do not fill tank to the very top; leave room for expansion.
- Always reinstall fuel tank cover after filling tank.

## FUEL PRE-FILTER - DRAIN (Deutz)

Drain water from fuel:

**NOTICE:** System may be under some pressure.

- Step 1: Follow [Shutdown Procedure](#), page [15-1](#).
- Step 2: Refer to Engine Operation Manual Fuel System chapter.
- Step 3: Place suitable collecting containers underneath.
- Step 4: Disconnect electrical wire connector.
- Step 5: Loosen drain plug (1) slowly.
- Step 6: Drain fluid until pure diesel fuel runs out.
- Step 7: Tighten drain plug.
- Step 8: Reconnect electrical wire connector.



## FUEL/WATER SEPARATOR - DRAIN (CUMMINS)

Drain fuel/water separator (1).

**Step 1:** Follow *Shutdown Procedure*, page 15-1.

**Step 2:** Loosen plug and drain element.

**Step 3:** Remove element/bowl assembly.

**Step 4:** Remove bowl (do not discard) and clean gland.

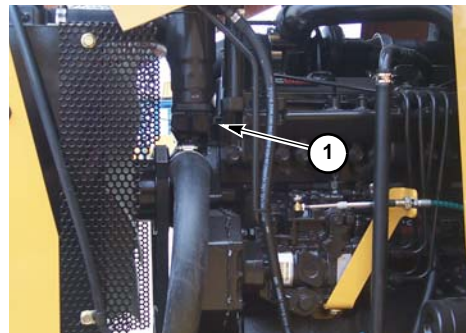
**Step 5:** Lubricate O-ring with clean diesel fuel and place it in bowl.

**Step 6:** Snugly tighten bowl onto element.

**Step 7:** Lubricate filter top with clean diesel fuel and install it. After it contacts filter head, tighten it an additional 2/3 to 3/4 turn.

**Step 8:** Prime fuel system. Refer to the Engine Operation Manual.

Do not fill elements with fuel before installing. The fuel could be contaminated and damage engine.



## AIR CLEANER RESTRICTION INDICATOR-CHECK (DEUTZ/GM)

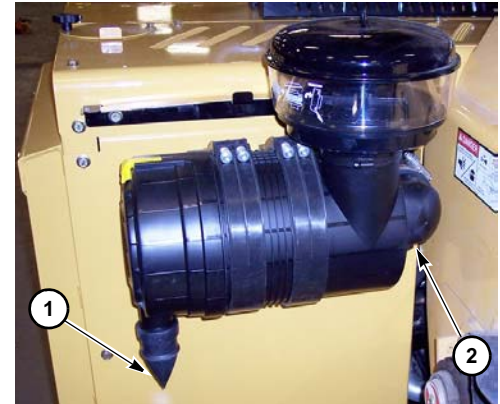
Squeeze air cleaner dust evacuator valve (1) on air cleaner assembly daily to clear away any dust buildup. Verify dust evacuator valve (1) operates by pressing apart lips of discharge slot. Replace valve if rubber is damaged or discharge slot does not close properly.

The air cleaner restriction indicator shows when the filter element is dirty. The restriction indicator will not function correctly if the following occurs:

- Element is damaged or not seated properly in inlet housing.
- Air cleaner body is damaged, allowing unfiltered air to enter the engine.
- Air transfer duct between air cleaner and engine is damaged or clamps are loose.
- Air duct between air cleaner and restriction indicator is damaged or pinched.

Clean or replace filter element immediately when the yellow indicator reaches the red area.

Reset indicator by pressing button (2) on end of the restriction indicator.



## AIR CLEANER RESTRICTION INDICATOR - CHECK (CUMMINS/CATERPILLAR)

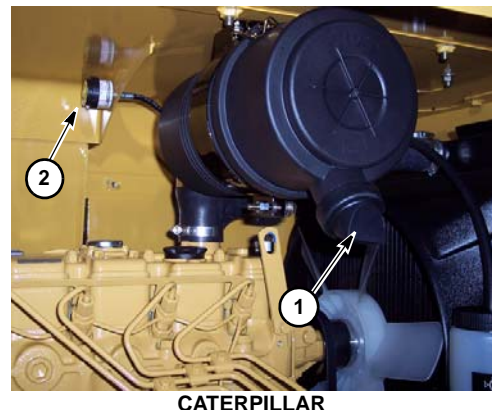
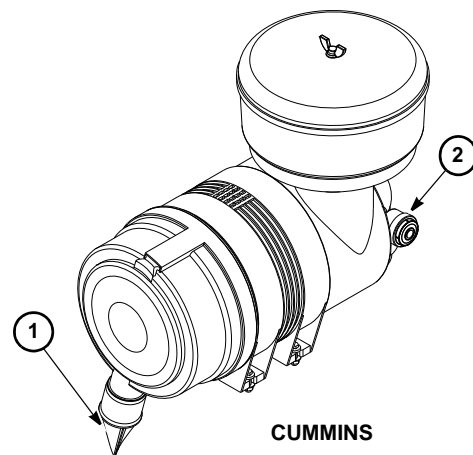
Squeeze air cleaner dust evacuator valve (1) on air cleaner assembly daily to clear away any dust buildup. Verify dust evacuator valve (1) operates by pressing apart lips of discharge slot. Replace valve if rubber is damaged or discharge slot does not close properly.

The air cleaner restriction indicator shows when the filter element is dirty. The restriction indicator will not function correctly if the following occurs:

- Element is damaged or not seated properly in inlet housing.
- Air cleaner body is damaged, allowing unfiltered air to enter the engine.
- Air transfer duct between air cleaner and engine is damaged or clamps are loose.
- Air duct between air cleaner and restriction indicator is damaged or pinched.

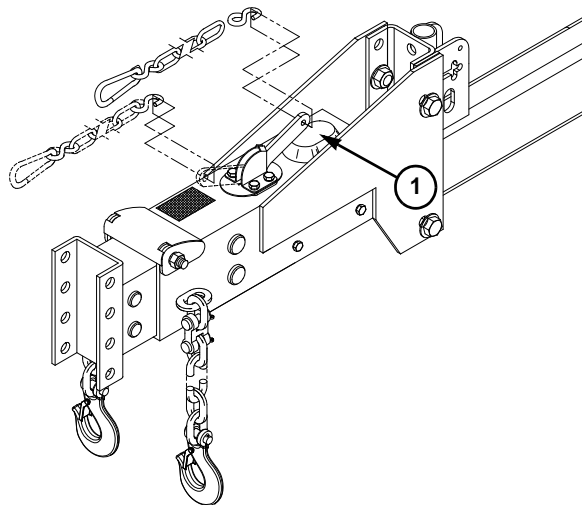
Clean or replace filter element immediately when the yellow indicator reaches the red area.

Reset indicator by pressing button (2) on end of the restriction indicator.



## HYDRAULIC SURGE BRAKE (STANDARD BC1000XL OPTION) FLUID LEVEL - CHECK

- Step 1:** Remove master cylinder cap (1) and filler cap beneath it.
- Step 2:** Check that brake fluid reservoir is at least half full. If not, fill to 3/8" (10 mm) below the top of the reservoir. Use DOT-3 heavy duty hydraulic brake fluid.
- Step 3:** Install filler cap and cylinder cap.



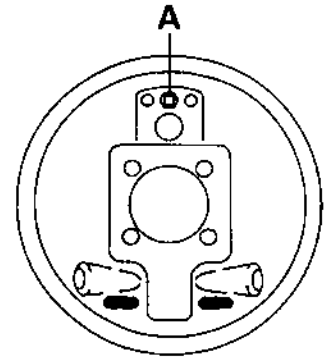
## HYDRAULIC SURGE BRAKES (STANDARD BC1000XL OPTION) - CHECK FUNCTION

The surge brakes are controlled by an actuator on the tongue. The brakes are applied by the force of the machine against the actuator as the towing vehicle slows down.

For proper function, brake lines must be bled and the brakes properly adjusted. If pressure bleeding equipment is available, follow the manufacturer's instructions. To bleed system manually:

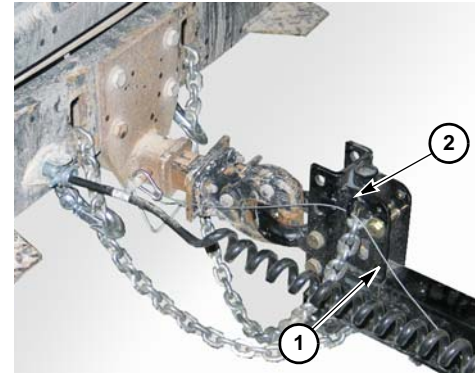
- Step 1:** Fill actuator brake fluid reservoir with DOT-3 heavy duty fluid.

- Step 2:** Install a bleeder hose onto bleeder screw **(A)**. Submerge loose end of the hose in a glass container partially filled with brake fluid so bubbling in the following steps can be seen.
- Step 3:** Retract hydraulic brake actuator using a lever against the end of the actuator or a large clamp around the actuator.
- Step 4:** Gradually open bleeder screw **(A)** to release air and brake fluid.
- Step 5:** Tighten bleeder screw.
- Step 6:** Release brake actuator. Repeat this step until bubbles no longer flow from the bleeder hose. Refill master cylinder. Do not allow the master to fall below half full.
- Step 7:** Repeat Steps 2–6 for the other brake.
- Step 8:** Fill master cylinder with brake fluid.
- Actuator travel of over 1" (2.5 cm) by front roller path indicates a need to adjust the brakes.



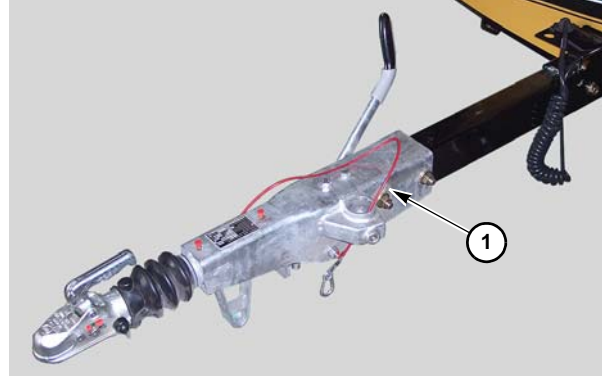
## **BRAKE SYSTEM - CHECK (STANDARD)**

- Check that breakaway cable **(1)** is present, in good condition, and properly routed through guide link **(2)**.
- Check operation of brakes using manual controller on towing vehicle brake controller.



## BRAKE SYSTEM - CHECK (BC1000XL EUROPEAN)

- Check that breakaway cable (1) is present and in good condition.
- Check operation of mechanical surge brakes.



## ELECTRIC BRAKES - TEST

Electrical current from the tow vehicle controls the brakes. To function properly, the brakes must be correctly adjusted and the electrical components must be reliable.

Engage brakes while coasting at 20–30 mph (30–50 km/h) in a traffic-free area. The braking force should easily be noticed in the tow vehicle.

If not operating properly, adjust brakes and check the following electrical components:

- All wire connections
- Trailer plug for corrosion
- While adjusting brakes, check magnets for wear or shorting.
- Check automatic brake controller. Refer to “Automatic Brake Controller with Manual Override (Option) - Check,” [page 45-7](#).



## CUTTER DRUM DRIVE BELT TENSION - INITIAL CHECK

Check cutter drum drive belt tension after the first 10 hours of use, and every 50 service hours after that. Refer to “Cutter Drum Drive Belt Tension - Check/Adjust,” [page 30-3](#).

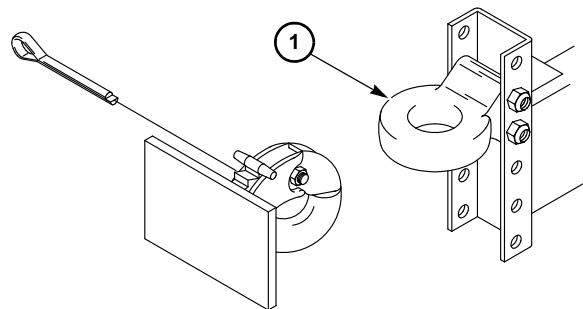
## WHEEL LUG NUT TORQUE - INITIAL CHECK

Check wheel lug nut torque after first 10 service hours, and every 100 service hours thereafter.

- 5200 lb axle is a 6-bolt wheel mount. Torque to 95 ft-lb (129 Nm).
- 7000 lb axle is a 8-bolt wheel mount. Torque to 135 ft-lb (183 Nm).
- European axle is 6-bolt wheel mount. Torque to 210 ft-lb (285 Nm).

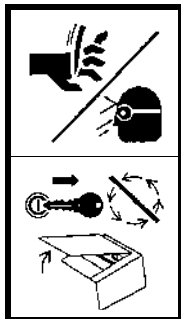
## PINTLE HITCH - CHECK

Check pintle hitch for cracks, damage, and wear. If wear exceeds 1/8" (3 mm) from the original surface profile, replace the pintle ring (1). Check mounting bolts for signs of loosening or damage. Torque mounting bolts to 180 ft-lb (245 Nm). Contact your Vermeer dealer for approved parts.



## KNIFE/DRUM MAINTENANCE

The recommended service interval to check the cutter knives is 10 service hours. However, the actual service hours interval before knife maintenance is required may be more or less, depending upon the wood being chipped and the chipping conditions.



**WARNING:** Rotating knives under cover can cut off hand.  
Thrown objects can strike you.

Stop engine, wait for drum to stop, then open access cover.

Performing the following maintenance procedures will aid in reducing the possibility of the knives becoming loose, failing, and being ejected from the machine.

### Knife Removal

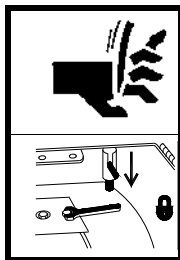


**WARNING:** Wear gloves when working with the cutter drum knives. Serious cutting injuries will result if contact is made with the knives while removing or installing them.

**NOTICE:** Always remove and replace knives as sets. Chipper balance can be affected if matched knives are not kept together.

To remove knives:

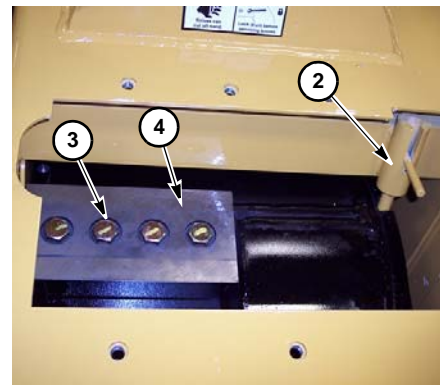
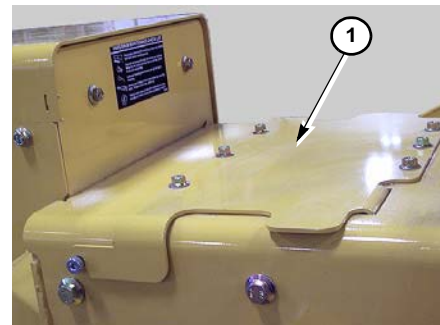
- Step 1:** Follow [Shutdown Procedure](#), page 15-1.
- Step 2:** Remove six bolts and open cutter drum access door (1).



**WARNING:** Knives can cut off hand.

Lock drum before servicing knives.

- Step 3:** Lock cutter drum to prevent the drum from rotating while working on the knives. Align one of the two lock holes in the cutter drum and engage lock pin (2).
- Step 4:** Remove four bolts (3) from first knife (4). To prevent damage, do not use impact tool to remove bolts.
- Step 5:** Lift off knife from drum.
- Step 6:** Unlock cutter drum. Pushing on outside surface of drum, rotate drum 1/2 turn to the next cutter knife.
- Step 7:** Lock cutter drum.
- Step 8:** Repeat Steps 2–5 to remove both knives.
- Step 9:** Clean and inspect drum, mounting surfaces, knives, and bolts as per the instructions that follow.



## Knife Inspection

- **Cracks** — Thoroughly clean the knives and inspect both sides of each knife for cracks. If any are found, discard the knife and install a new one.

Cracks (1) that start at the mounting hole and progress outward result from the mounting bolts being improperly torqued.

**NOTICE:** Knife sizes and number of mounting holes may vary between machine models.

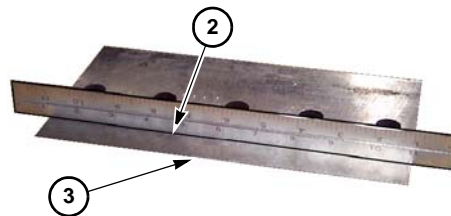
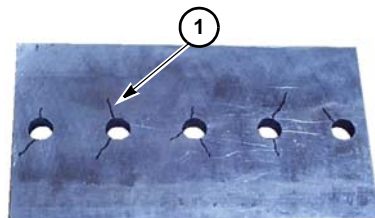
If cracked knives are reused, the cracks will extend across the knife and the knife can separate from the cutter drum.

- **Distortion** — Check the mounting side of the knife for distortion. Bolting a distorted knife to the cutter drum will add stresses in the knife and possibly cause knife cracking and failure.

**Step 1:** Place a straightedge (2) on the mounting side of the knife (3) and parallel to the mounting holes as shown.

**Step 2:** Move straightedge slowly across the knife surface, and monitor for any light that shows between the knife and straightedge. If any light appears between the knife surface and the straightedge, this indicates that the knife is distorted, and the knife must be replaced.

**Step 3:** Turn straightedge perpendicular to mounting holes and repeat Step 2.



## Bolt Inspection



**WARNING:** Overtightened bolts can cause knife distortion, allowing wood to pack under the knife. Distorted knives can crack and fail resulting in death or serious injury, and machine damage. Use a straightedge and check all knives for distortion; discard any that are distorted.



**WARNING:** Knife-mounting bolts must be replaced each time knives are sharpened or replaced. Bolts may be reused **ONLY ONCE** when rotating knife to its second cutting edge. Failure to replace bolts can cause knife/drum separation resulting in death or serious injury, and machine damage.



**WARNING:** Incorrect maintenance and torquing of the knife-mounting bolts can cause the knives to become detached from the cutter drum. Death or serious injury is possible if the failed knives are ejected from the machine and strike someone. Extensive and costly damage to the cutter drum and machine will probably occur if the knives become detached.

**NOTICE:** Mounting bolts may be reused one time only, such as when rotating the double-edged knife to its second side. When installing a new or sharpened set of knives, discard the existing mounting bolts and use new Vermeer-approved bolts. Repeated reuse of the bolts will decrease their clamping capacity each time the bolts are torqued. Inadequate clamping of the knives will cause the knives to loosen and fail.

**Bolts** — Inspect bolts (1) for damaged threads, corrosion, and distortion. If any are found, discard the bolt and install a new one.



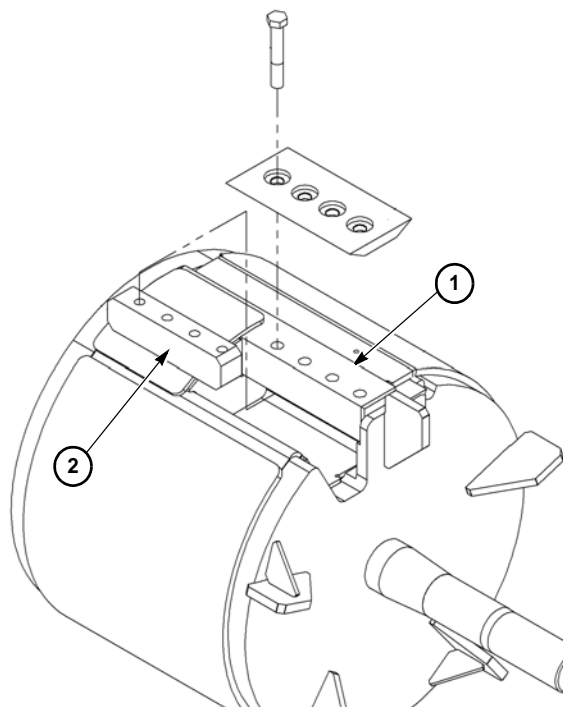
## Knife Mount Surface Inspection

When a cutting knife is removed from the drum, the knife-mounting surfaces on the drum must be cleaned and inspected.

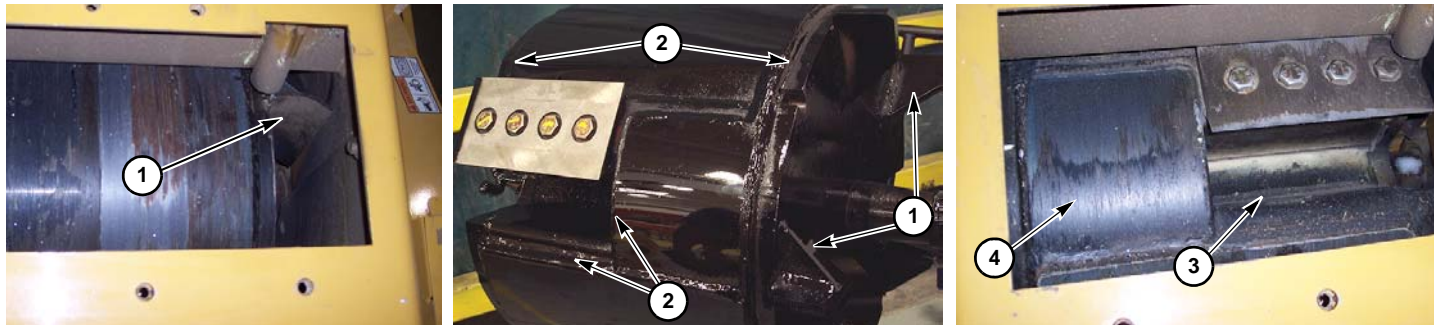
**NOTICE:** Any debris left on the mounting surface can prevent the knife from lying perfectly flat on its mating surface. Any dirty or damaged threads will affect the bolt torque, and prevent the knives from being properly clamped. Either of these conditions can lead to knife failure during operation.

Thoroughly clean and inspect the following:

- **Knife Mount Surface** — Remove all wood chips and other material from the mounting pocket area (1).
- **Replaceable Thread Bars (2)** — Replace when threads become worn, distorted, or damaged.



## Drum Inspection



The cutter drum must be free of any damage. Thoroughly clean and inspect the following:

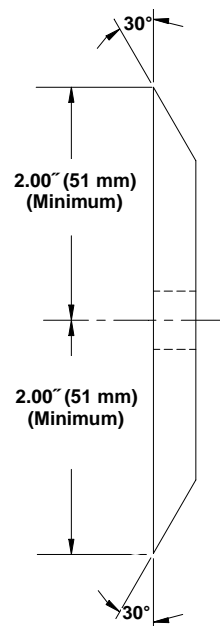
- **Air Paddles** — Inspect air paddles (1) and their gussets for cracking and deformation.
- **Edge Welds** — Inspect entire drum for cracks (2) in the welds where the drum sides are joined to the drum. Use a mirror to aid in this inspection.
- **Pockets** — Closely inspect area in and around knife mount and pockets (3) for damage or cracks.
- **Cutter Drum Surface** — Inspect drum surface (4) for cracks that may begin at the pockets and migrate outward.

If any drum damage or cracks are found, contact an authorized independent Vermeer dealer.

## Knife Sharpening

- Sharpen knives at a 30° angle.
- Use a soft “J” grade grinding wheel with 36 to 46 grit.
- Use adequate coolant while grinding.
- Hone knives between sharpening with an oil honing stone.

**NOTICE:** The knives are double-edged and have a minimum usable size of 2.00" (51 mm) measured from the centerline of the bolt holes to the knife edge. Do not use a side of a knife that measures less than this.





## Knife Installation

- Step 1:** Clean and inspect all cutter drum components as per the preceding instructions.
- Step 2:** Lock cutter drum.
- Step 3:** Install knife (1) with the bevel oriented as shown, and with thread bar (2) in place inside drum.

**NOTICE:** On resharpened knives, measure the distance from the mounting holes to the sharpened edges. Mount knives so edges with the same measurement are oriented the same way at both locations.

- Step 4:** Lubricate bolts (3) with light oil and install. Lightly tighten all four bolts to hold the knife in place.

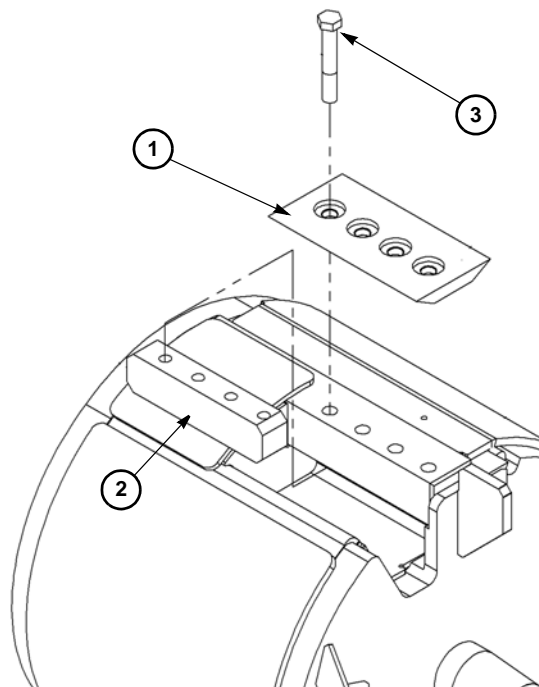


**WARNING:** Mounting bolts (3) must be replaced each time knives are sharpened or replaced. Bolts may be reused **ONLY ONCE** when rotating knife to its second cutting edge. Failure to replace bolts can cause knife/drum separation resulting in death or serious injury, and machine damage. Also, to prevent bolt damage, do not use a power or impact tool to install knife/drum bolts.

- Step 5:** Torque bolts with a torque wrench to 210 ft-lb (285 Nm) beginning with the center bolts. Torque in the same sequence again after the last bolt is tightened.



**WARNING:** Overtightened bolts can cause knife distortion, allowing wood to pack under the knife. Distorted knives can crack and fail resulting in death or serious injury, and machine damage. Use a straightedge and check all knives for distortion; discard any that are distorted.



**Step 6:** Unlock cutter drum and rotate 1/2 turn to the next cutter knife.

**Step 7:** Lock cutter drum.

**Step 8:** Repeat Steps 3–5 to install both knives.

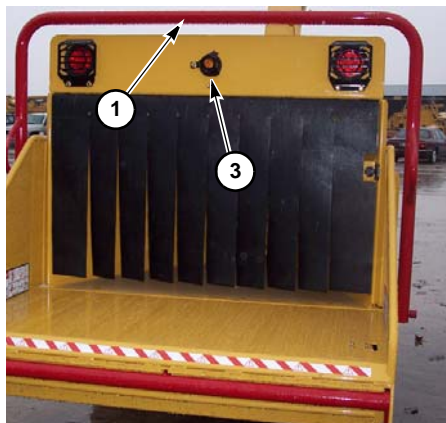
**Step 9:** Close and secure cutter drum access door.

**NOTICE:** The cutter drum access door will not fully close until the drum lock pin is released and stored.

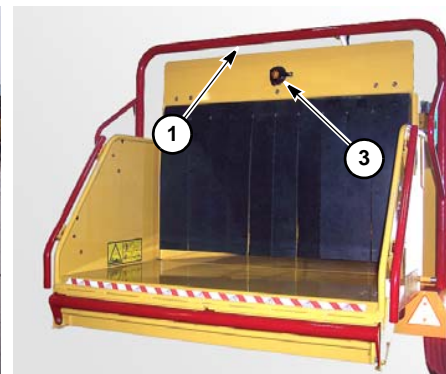
**Step 10:** Adjust shear bar. Refer to “Shear Bar - Check/Adjust,” [page 65-8](#).

## FEED ROLLER CONTROLS - CHECK

- Step 1:** Follow engine Starting Procedure (refer to the [Operator's Manual](#)), engage cutter drum, set engine speed to high RPM.
- Step 2:** Place *Upper Feed Control Bar* (1) in FORWARD, and momentarily push *Hold-to-Run Button* (2) to start feed roller.
- Step 3:** Conduct the following feed roller control checks.



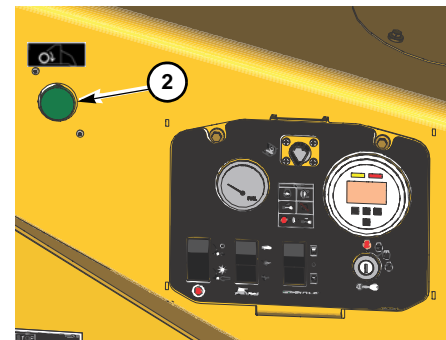
BC1000XL STANDARD



BC1000XL EUROPEAN

### Upper Feed Control Bar

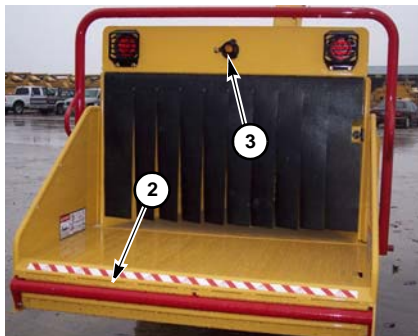
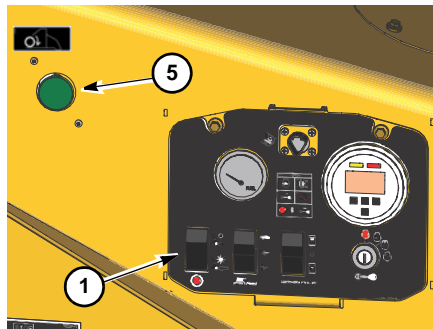
Pull *Upper Feed Control Bar* (1) to rear STOP position. Feed roller rotation must stop and *Rear Warning Light* (3) must flash quickly. If feed roller does not stop, contact your authorized independent Vermeer dealer for corrections and repairs before using the machine.



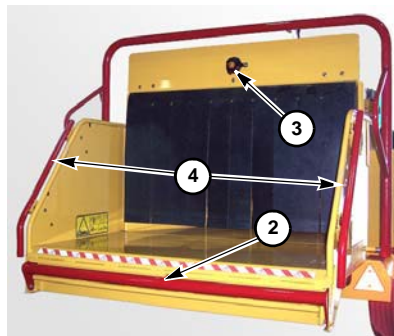
## Lower Feed Stop Bar and Side Feed Stop Bars

- Step 1:** **(BC1000XL Only)** Select NORMAL sensitivity with *Lower Feed Stop Bar Sensitivity Switch (1)*.
- Step 2:** Engage feed roller, then move *Lower Feed Stop Bar (2)*. Feed roller rotation must stop and the *Rear Warning Light (3)* flash quickly when the *Lower Feed Stop Bar (2)* is pushed forward approximately 3/4" (2 cm).
- Step 3:** **(BC1000XL European Only)** Engage feed roller, then push *Side Feed Stop Bar (4)*. Feed roller rotation must stop and *Rear Warning Light (3)* flash quickly when the *Side Feed Stop Bar (4)* is pushed forward approximately 3/4" (2 cm). Repeat test for *Side Feed Stop Bar* on other side of feed table.
- Step 4:** Push *Hold-to-Run Button (5)* to restart feed roller.
- Step 5:** **(BC1000XL Only)** Select REDUCED sensitivity with *Lower Feed Stop Bar Sensitivity Switch (1)*. Feed roller rotation must stop and the *Rear Warning Light (3)* must flash quickly when *Lower Feed Stop Bar (2)* is pushed forward approximately 1-1/2" (4 cm). Push *Hold-to-Run Button (5)* to restart feed roller.

If the feed roller control system does not work correctly, contact your authorized independent Vermeer dealer for corrections and repairs before using the machine.



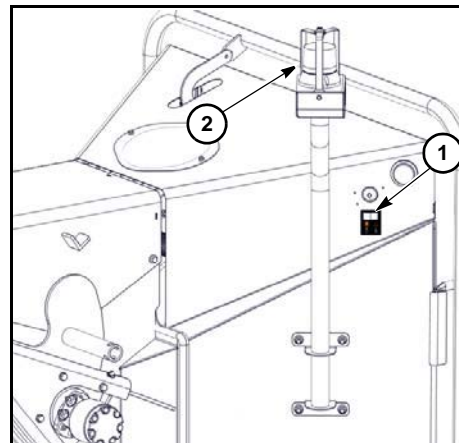
STANDARD



BC1000XL EUROPEAN

## REMOTE CONTROL BEACON - CHECK (OPTION)

Push *Control Station Selector Switch* (1) on either side of machine to select REMOTE mode. The remote control beacon (2) must turn on. If the beacon fails to turn on, the machine must not work in the remote mode. If the remote control will operate the machine when the beacon does not turn on, contact your Vermeer dealer for corrections and repairs before using the machine.



This page intentionally left blank.

# Section 30: Maintenance - 50 Service Hours

## ENGINE MAINTENANCE

- Initial Change engine oil and filter (Deutz).
- Fuel tank water and sediment drain (Deutz/Caterpillar)

Refer to the Engine Operation Manual supplied with the machine for instructions.

## HYDRAULIC FLUID FILTER - INITIAL REPLACEMENT

Replace hydraulic fluid filter element on a new machine after the first 50 service hours and every 250 service hours after that. To replace filter element. Refer to “Hydraulic Fluid Filter - Replace,” [page 45-6](#).

## MACHINE COMPONENTS - INSPECT

**Hardware** - Check machine for loose, worn, or missing parts and hardware. Tighten any loose parts and replace any worn or missing parts (refer to the [Parts Manual](#) for replacement parts).

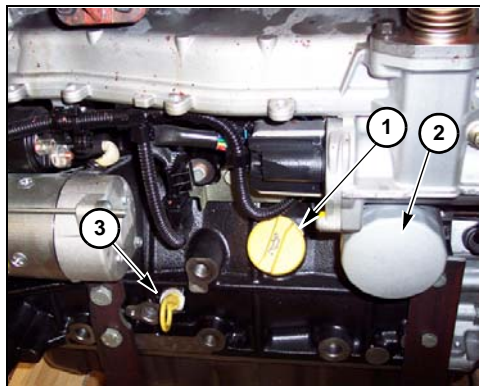
**Frame** - Check frame, and contact dealer immediately if you notice any bending or cracking.

## ENGINE OIL AND FILTER - INITIAL CHANGE/REPLACE (DEUTZ)

**NOTICE:** Change engine oil every 500 hours thereafter.

Refer to the Engine Operation Manual supplied with each machine for instructions.

- (1) Oil Fill Cap
- (2) Oil Filter
- (3) Oil Dipstick
- (4) Oil Drain Plugs

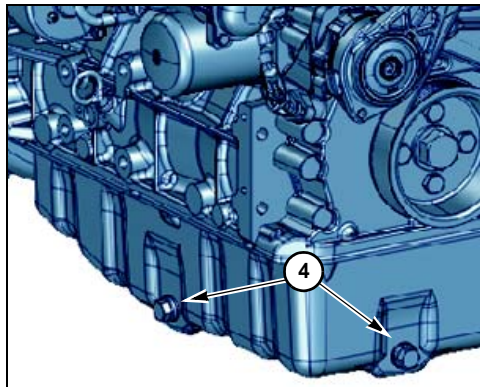


## SHEAR BAR MOUNTING HARDWARE - CHECK

Check all bolts holding the shear bar in place. Ensure they have a torque value of 210 ft-lb (285 Nm). Failure to check and maintain torque value weekly may cause the shear bar to become loose and contact the rotating knives.



**WARNING:** Incorrect maintenance and torquing of the shear bar mounting bolts may result in the shear bar loosening in the cutter housing. Chipper knives may strike and damage the loosened shear bar and fail. Serious injury or death is possible if the failed knives or damaged shear bar are ejected from the machine and strike someone. Extensive and costly damage to the cutter drum, knives, shear bar, and machine will probably occur if the knives become detached.





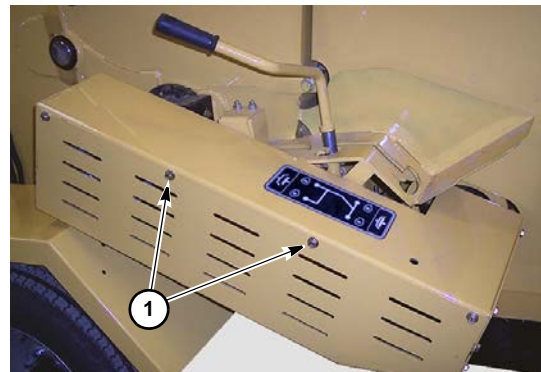
## CUTTER DRUM DRIVE BELT TENSION - CHECK/ADJUST

Proper tension is important for longer life and proper machine operation. If the belts are excessively tight, drive sheave bearing failure or cutter drum bearing failure may occur. If the belts are too loose, slippage will occur.

*To check belt tension:*

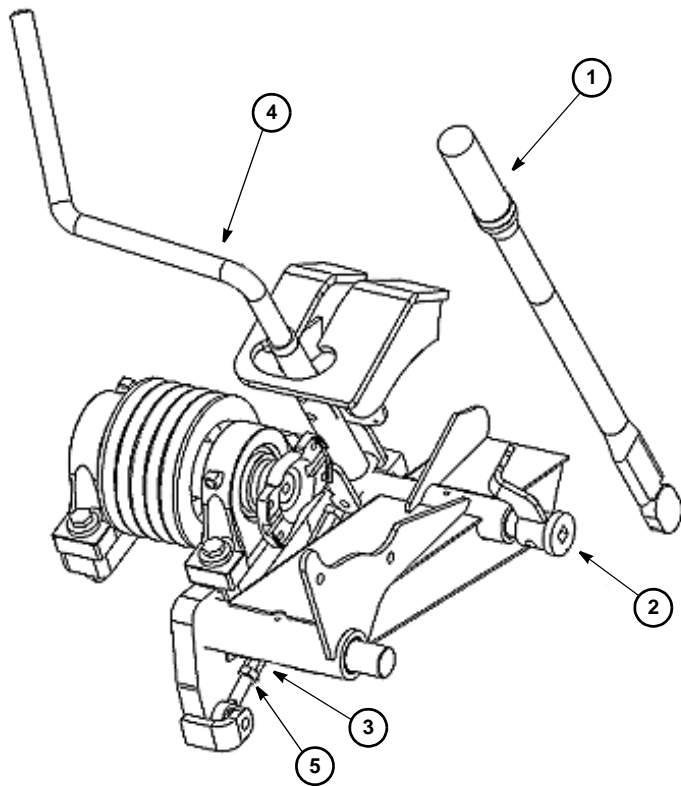
**Step 1:** Follow [Shutdown Procedure](#), page [15-1](#).

**Step 2:** Remove 13 mounting bolts (1) and front panel of belt shield.



## Cutter Drum Drive Belt Tension - Adjust

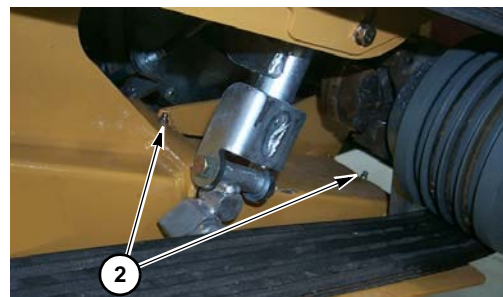
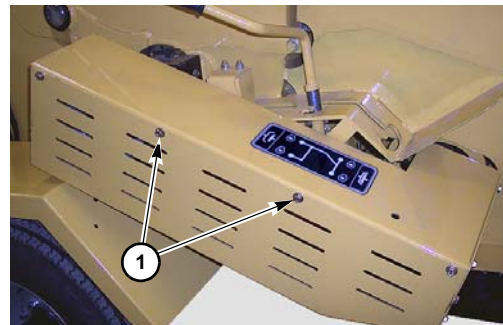
- Step 1:** Move clutch handle (4) to engaged position.
- Step 2:** Set a torque wrench (1) to 125 ft-lb (169.5 Nm), and attach wrench to clutch cable (2).
- Step 3:** Adjust linkage by rotating turnbuckle (3) until clutch handle (4) just reaches the bottom of detent slot when applying 125 ft-lb (169.5 Nm) force using torque wrench.
- Step 4:** Tighten jam nuts (5) on turnbuckle assembly.
- Step 5:** When belt tension is correct, install front panel of belt shield and secure with mounting bolts.



## BELT DRIVE PIVOTS - GREASE

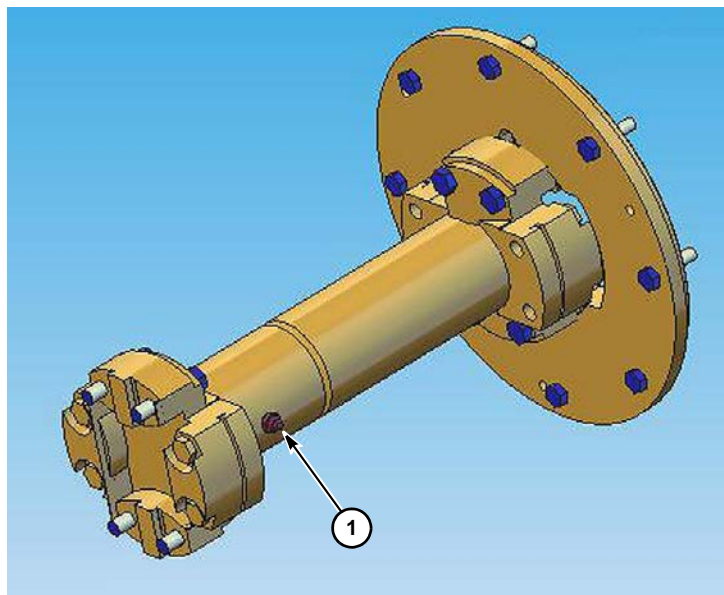
Remove mounting bolts (1) and belt shield.

Apply one shot of grease to two fittings (2).



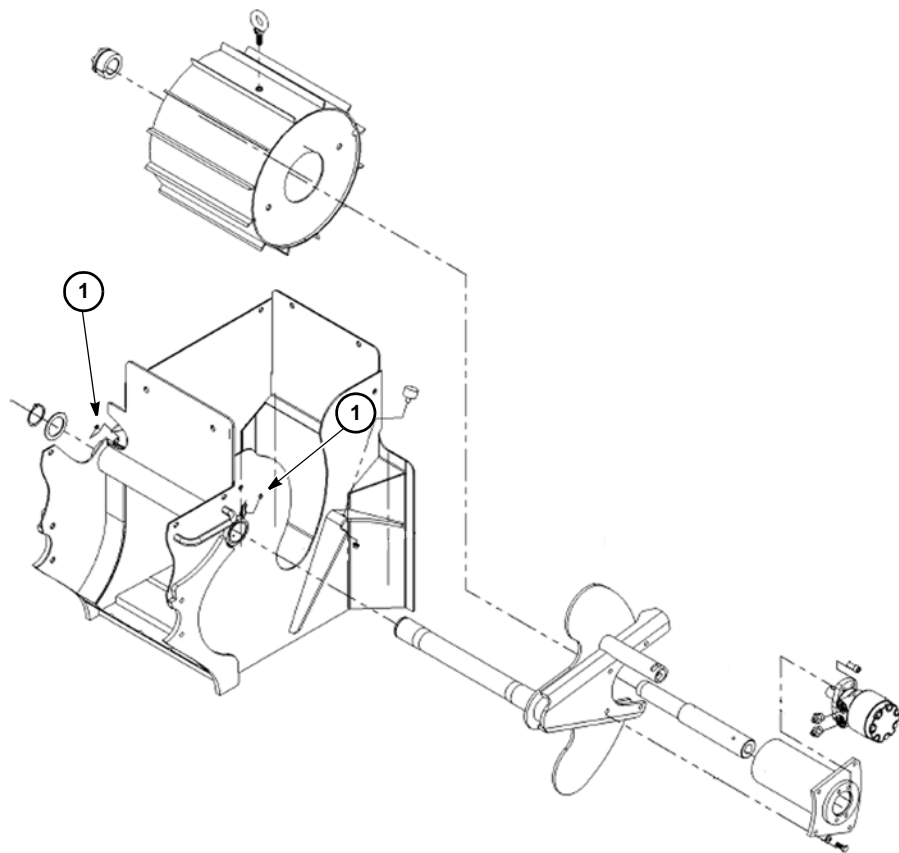
## BELT DRIVE U-JOINTS - GREASE

- (1) One shot ..... one fitting



## FEED ROLLER ARM PIVOTS - GREASE

(1) One shot..... two fittings



This page intentionally left blank.

# Section 35: Maintenance - 100 Service Hours

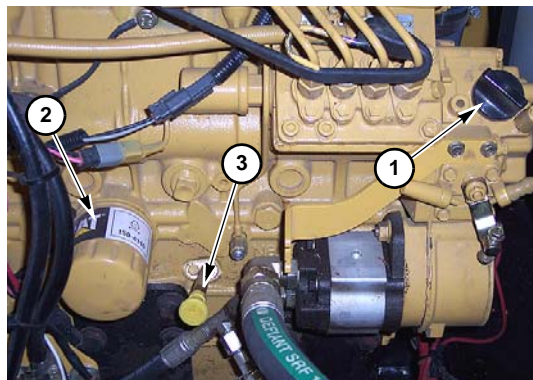
## ENGINE MAINTENANCE - (CATERPILLAR)

- Change engine oil and replace filter.
  - Refer to the Engine Operation Manual supplied with the machine for instructions.
- Propane system check:
  - Ensure all connections are tight and hoses are in good condition before applying pressure to the system. Check fuel lines, fittings, and hoses for leaks or damage. Check hose protective sleeving and replace if worn or damaged. Check for rubbing, pinching and kinks in fuel lines which might cause damage or leakage. Replace if worn or damaged.

## ENGINE OIL AND FILTER - CHANGE/REPLACE (CATERPILLAR)

Refer to the Engine Operation Manual supplied with each machine for instructions.

- (1) Oil Fill Cap
- (2) Oil Filter
- (3) Oil Dipstick
- (4) Oil Drain Plug (not shown - on engine front left)



## MACHINE COMPONENTS - INSPECT

**Shields and Guards** - Check that all shields and guards are installed and are fastened securely to machine. Replace or repair any shields or guards that are damaged or have missing parts.

**Curtains** - Check curtains for rips, tears, or wear. Replace any damaged curtains.

**Highway Lights** - With lights plugged into towing vehicle, check that all vehicle lights are operating properly. Refer to “Highway Lights - Replace,” [page 65-12](#).

**Reflectors** - Check that reflectors are present. Replace missing or damaged reflective materials.

**Electrical Harness** - Check that electrical harness and all wires are properly supported and not rubbing on any sharp corners. Support any loose wires hanging under machine frame.

**Tow Chains and Slip Hooks** - Check for damage and replace if necessary. Refer to “Towing Chain - Replace,” [page 65-13](#). Refer to “Slip Hook - Replace,” [page 65-13](#).

**Slip Resistant Material** - Check for worn or missing slip resistant strips on top of machine and walk areas. Replace at once if damaged (refer to the [Parts Manual](#) for replacement parts).

## Safety Signs - Maintain

Safety signs located on your machine contain important and useful information that will help you operate your equipment safely. Refer to the [Parts Manual](#) for identification and location of safety signs.

To assure that all signs remain in place and in good condition, follow instructions given below:

- Keep signs clean. Use soap and water - not mineral spirits, abrasive cleaners, or other similar cleaners that will damage the decal.
- Replace any damaged or missing signs. When attaching signs, the temperature of the mounting surface must be at least 40°F (5°C). The mounting surface must also be clean and dry.
- When replacing a machine component with a sign attached, replace sign also.
- Replacement signs can be purchased from your Vermeer equipment dealer.



## HYDRAULIC SYSTEM - CHECK



**WARNING:** Pressurized fluid can penetrate body tissue and result in serious injury or death. Leaks can be invisible. Keep away from any suspected leak. Relieve pressure in the hydraulic system before searching for leaks, disconnecting hoses, or performing any other work on the system. If you must pressurize the system to find a suspected leak, use an object such as a piece of wood or cardboard rather than your hands. When loosening a fitting where some residual pressure may exist, slowly loosen the fitting until oil begins to leak. Wait for leaking to stop before disconnecting the fitting. Fluid injected under the skin must be removed immediately by a surgeon familiar with this type of injury.

Ensure all connections are tight and hoses are in good condition before applying pressure to the system.

Check hydraulic lines, fittings, and hose sleeves for leaks or damage. Check for rubbing or pinching of lines which might damage the line. Repair or replace as necessary. Check hose protective sleeving and replace if worn or damaged.

Check hydraulic system for leaks, kinked hoses, and hoses or other parts that rub against each other.

When adding new hydraulic fluid, ensure fluid is clean. Failure to do so could result in component failure.

### Hydraulic Tank - Keep Clean

Clean hydraulic fluid is very important for longer life and good operation of hydraulic components. Take care not to spill dirt or other contaminants into the tank when checking or adding hydraulic fluid. Filter all hydraulic fluid through a 10-micron filter before adding it to the tank.

## TIRES AND RIMS - CHECK



**WARNING:** Tire explosion can result if the following procedures are not followed:

- Maintain correct tire pressure. Do not inflate tire above recommended pressure.
- Low tire pressure can cause internal tire damage. Inflate to recommended pressure.
- Replace any tire with cuts or bubbles. Replace any damaged rims.
- Do not weld or heat wheel assembly. Heating will increase tire pressure.

- Check tires for correct pressure.
- Check tires and rims for damage.

Check lug nuts for tightness.

- 5200 lb axle is a 6-bolt wheel mount. Torque to 95 ft-lb (129 Nm).
- 7000 lb axle is a 8-bolt wheel mount. Torque to 135 ft-lb (183 Nm).
- European axle is 6-bolt wheel mount. Torque to 210 ft-lb (285 Nm).

## REMOTE CONTROL ENGINE STOP - CHECK (OPTION)

Check that engine stops whenever the Engine Stop Button on the remote control is pressed (refer to “Remote Control” in the *Operator's Manual*). If engine does not stop, contact your Vermeer dealer.

*Engine Stop Button* is active whenever remote control is ON and enabled and does not require *Remote Control / Console Selector Switch* to be in REMOTE.

## UPPER FEED CONTROL BAR FORCE - CHECK/ ADJUST

It should take 25–32 lb (12.7–14.5 kg) of force to move the *Upper Feed Control Bar* out of forward feed to stop position at top of feed table.

**Step 1:** Access adjustment nut (1) by removing *Upper Feed Control Bar* cover (2).

**Step 2:** Place a spring scale at the top and center of the *Upper Feed Control Bar* (3) to check the force.

**Step 3:** Loosen jam nut (4).

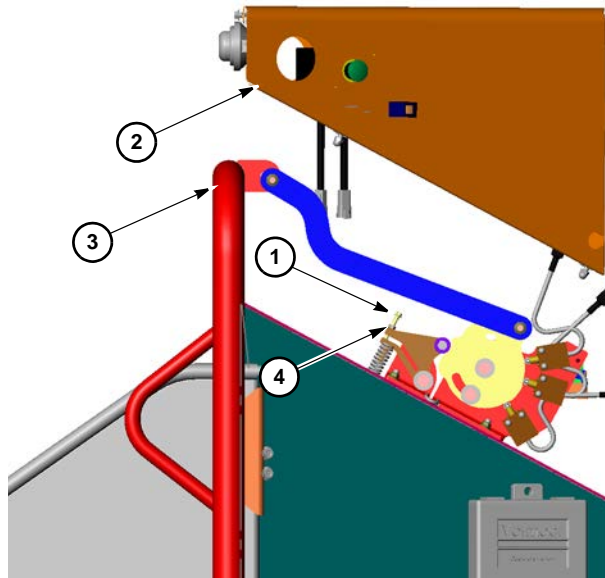
**Step 4:** Tighten adjustment nut (1) to increase force; loosen it to decrease force.

**NOTICE:** Adjust bolt so it takes 25–32 lb (12.7–14.5 kg) to move the bar out of forward feed to stop position.

**Step 5:** Retighten jam nut (4).

**Step 6:** Replace *Upper Feed Control Bar* cover (2).

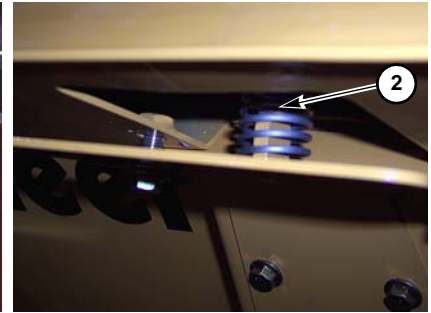
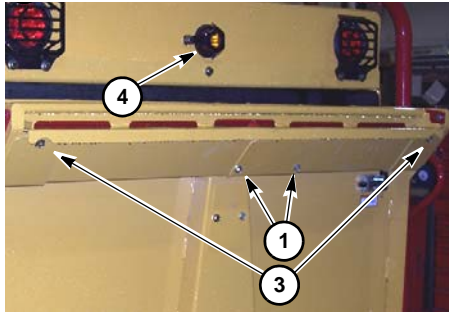
**NOTICE:** When the *Upper Feed Control Bar* is placed in the stop position, as shown, the feed roller must not turn.



## LOWER FEED STOP BAR SWITCH - CHECK/ADJUST (BC1000XL ONLY)

*Lower Feed Stop Bar* must stop feed roller if:

- The bar is pushed approximately 3/4" (2 cm) in Normal Sensitivity or approximately 1-1/2" (4 cm) in Reduced Sensitivity (112 and 102 degrees respectively); AND
- The horizontal force applied to the center of the bar is 28–32 lb (12.7–14.5 kg) in Reduced Sensitivity.

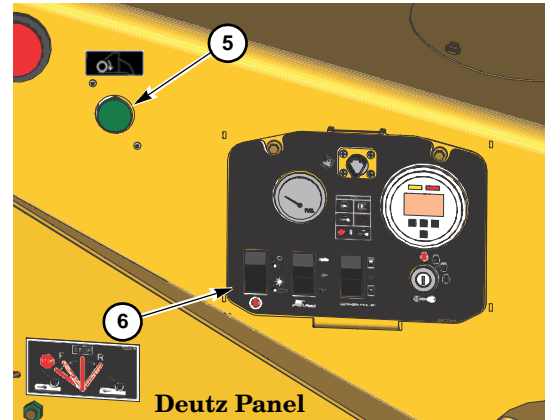


Test both distance and force required to stop the *Lower Feed Stop Bar* in Normal Sensitivity and Reduced Sensitivity. Adjust switch if either distance or force parameters are not within the specified range.

**NOTICE:** Rear amber warning light (4) will come on solid when Reduced Sensitivity is selected.

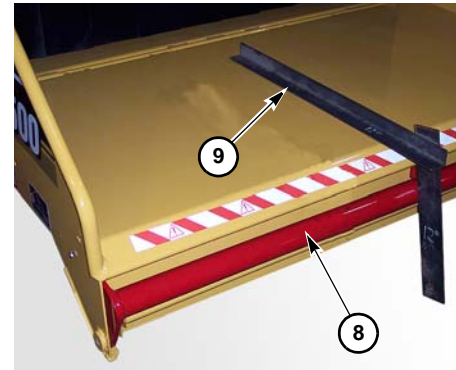
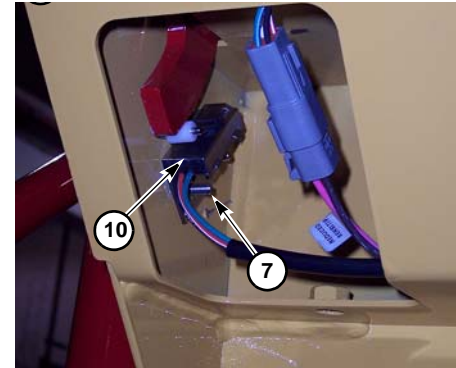
To adjust switches:

- Step 1:** Remove two bolts (1) and spring cover. Remove spring (2).
- Step 2:** Remove two bolts (3) and two switch covers.
- Step 3:** Turn key to ON position.
- Step 4:** Press *Hold-to-Run Button* (5) to reset flashing light.
- Step 5:** Select REDUCED on *Sensitivity Switch* (6).



**NOTICE:** Rear amber warning light (4) will come on solid.

- Step 6: Loosen two nuts (7) on switch adjustment plate located on left side of *Lower Feed Stop Bar* (8).
- Step 7: Set protractor (9) at 102°.
- Step 8: Set protractor flat on feed table as shown. Move *Lower Feed Stop Bar* (8) until it contacts straightedge. Hold or clamp in place.
- Step 9: Move switch adjustment plate (10) back until rear amber warning light (4) flashes.
- Step 10: Tighten nuts (7).
- Step 11: Reset flashing light and check setting. Repeat steps 5–10 if required.
- Step 12: Repeat procedure for Normal Sensitivity, adjusting plate located on the right side of *Lower Feed Stop Bar*, with protractor set at 112°.
- Step 13: Install two switch covers. Install spring and spring cover.



To check force:

**Step 1:** Inspect motion of *Lower Feed Stop Bar* to ensure that no parts are bent or damaged. Repair as required before proceeding.

**Step 2:** Turn key to ON position.

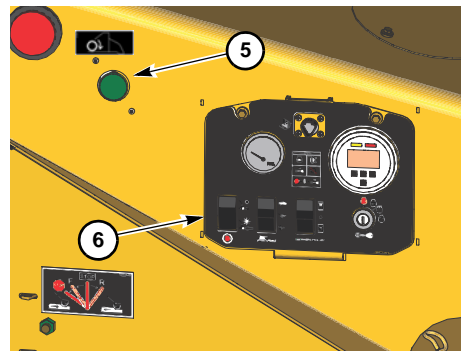
**Step 3:** Press *Hold-to-Run Button* (5) to reset flashing light.

**Step 4:** Select REDUCED on *Sensitivity Switch* (6).

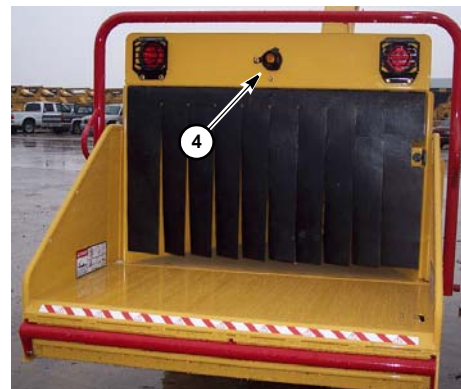
**NOTICE:** Rear amber warning light (4) will come on solid.

**Step 5:** Using a spring scale, push in a horizontal direction at the center of the *Lower Feed Stop Bar* and measure the force needed to trip the switch and start the amber warning light (4) flashing.

**Step 6:** If the force is different than 28–32 lb (12.7–14.5 kg), contact your Vermeer dealer.



Deutz Panel



## LOWER FEED STOP BAR SWITCH - CHECK/ADJUST (BC1000XL EUROPEAN ONLY)

*Lower Feed Stop Bar* must stop feed roller if:

- The bar is pushed approximately 4 cm (102 degrees); AND
- The horizontal force applied to the center of the bar is 12.7–14.5 kg (28–32 lb).

Test both distance and force required to stop the *Lower Feed Stop Bar*. The distance adjustment is set with the switch on left end of *Lower Feed Stop Bar*.

To adjust switch:

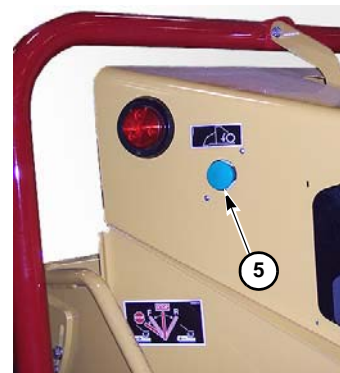
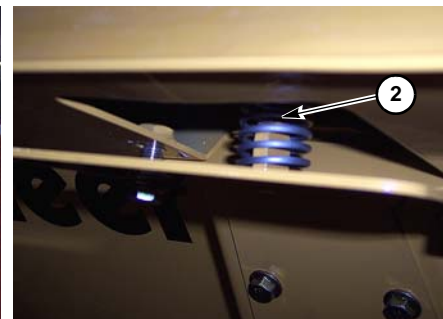
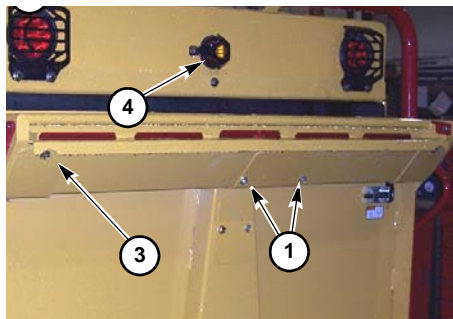
**Step 1:** Remove two bolts (1) and spring cover. Remove spring (2).

**Step 2:** Remove bolt (3) and switch cover.

**Step 3:** Turn key to ON position.

**Step 4:** Press *Hold-to-Run Button* (5) to reset flashing light.

**NOTICE:** Rear amber warning light (4) will come on solid.



**Step 5:** Loosen two nuts (6) on switch adjustment plate located on left side of *Lower Feed Stop Bar* (7).

**Step 6:** Set protractor (8) at 102°.

**Step 7:** Set protractor flat on feed table as shown. Move *Lower Feed Stop Bar* (7) until it contacts straightedge. Hold or clamp in place.

**Step 8:** Move switch adjustment plate (9) back until rear amber warning light (4) flashes.

**Step 9:** Tighten nuts (6).

**Step 10:** Reset flashing light and check setting. Repeat Steps 5–10 if required.

**Step 11:** Install switch cover. Install spring and spring cover.

*To check force:*

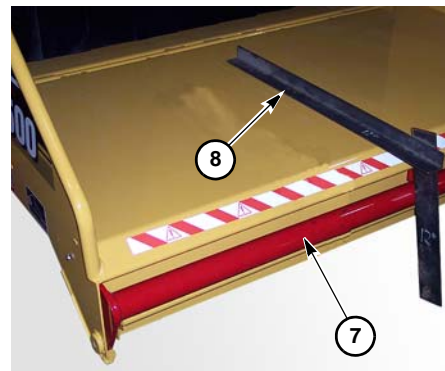
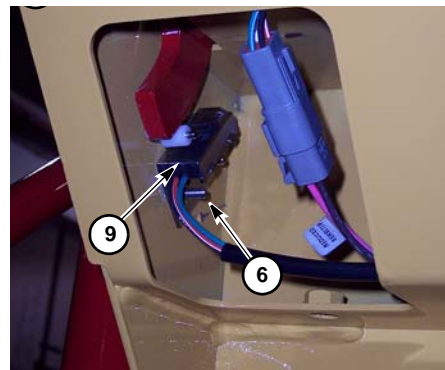
**Step 1:** Inspect motion of *Lower Feed Stop Bar* to ensure that no parts are bent or damaged. Repair as required before proceeding.

**Step 2:** Turn key to ON position.

**Step 3:** Press *Hold-to-Run Button* (5) to reset flashing light.

**Step 4:** Using a spring scale, push in a horizontal direction at the center of the *Lower Feed Stop Bar* and measure the force needed to trip the switch and start rear amber warning light (4) flashing.

**Step 5:** If the force is different than 12.7–14.5 kg (28–32 lb), contact your Vermeer dealer.



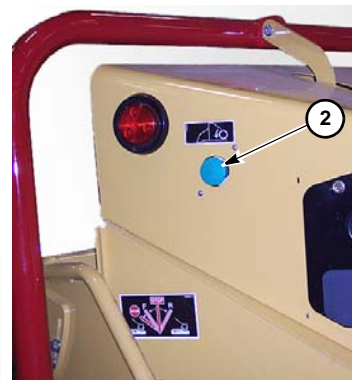
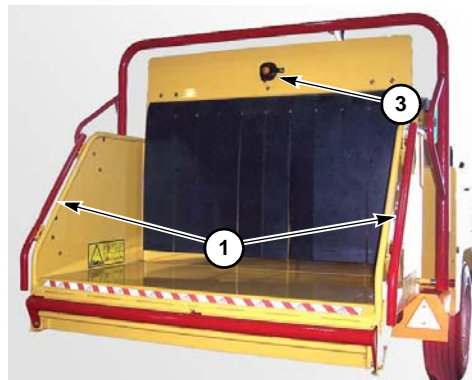


## SIDE FEED STOP BARS (BC1000XL EUROPEAN ONLY)

*Side Feed Stop Bars (1)* must stop feed roller if the horizontal force applied to the center of the side bars is 15.3–20.4 kg (34–45 lb).

*To check force:*

- Step 1:** Lower feed table.
- Step 2:** Turn key to ON position.
- Step 3:** Press *Hold-to-Run Button (2)* to reset flashing light.
- Step 4:** Using a spring scale, pull center of *Side Feed Stop Bar* in the direction of material feed. Measure the force needed to trip switch and start amber light (3) flashing.
- Step 5:** If the force is greater than 20.4 kg (45 lb), contact your Vermeer dealer.



This page intentionally left blank.

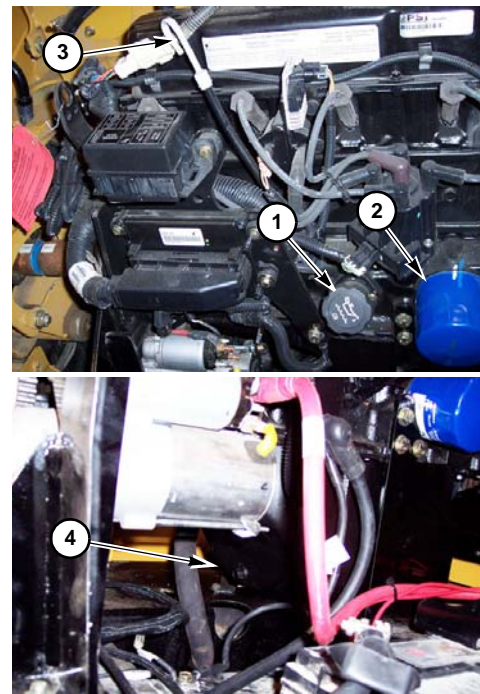
# Section 40: Maintenance - 200 Service Hours

## ENGINE OIL AND FILTER - CHANGE/REPLACE (GM)

**NOTICE:** Change engine oil every 200 hours.

Refer to the Engine Operation Manual supplied with each machine for instructions.

- (1) Oil Fill Cap
- (2) Oil Filter
- (3) Oil Dipstick
- (4) Oil Drain Plug



This page intentionally left blank.

# Section 45: Maintenance - 250 Service Hours

## ENGINE MAINTENANCE

- Change engine oil and filter every 250 hours.
- Inspect/adjust alternator, fan, pump belts.

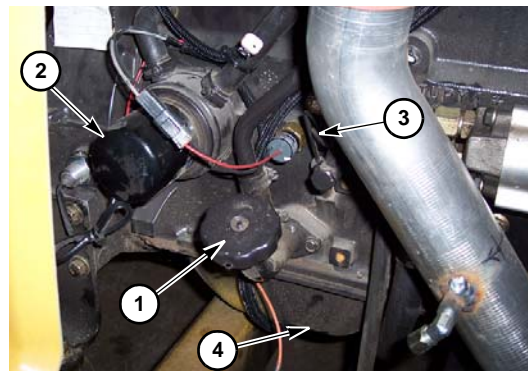
Refer to the Engine Operation Manual supplied with the machine for instructions.

- Inspect air intake system.
- Replace fuel filter.

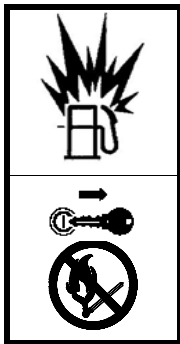
## ENGINE OIL AND FILTER - CHANGE/REPLACE (CUMMINS)

Refer to the Engine Operation Manual supplied with each machine for instructions.

- (1) Oil Fill Cap
- (2) Oil Filter
- (3) Oil Dipstick
- (4) Oil Drain Plug



## FUEL FILTERS - REPLACE (DEUTZ)



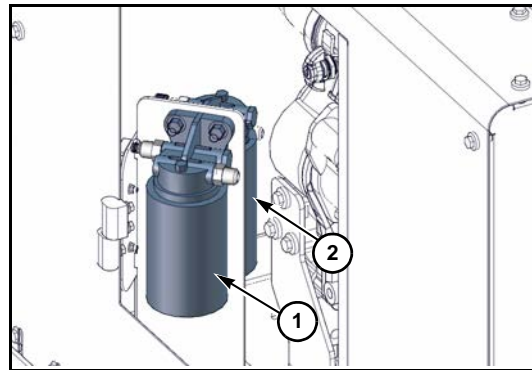
**WARNING:** Fuel and fumes can explode and burn. Fuel system under pressure.

Shut off engine before refueling. No flame. No smoking.

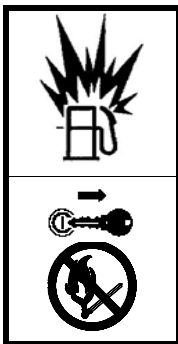
Replace fuel filters every 250 hours or sooner if needed.

**NOTICE:** Relieve pressure from lines, refer to Engine Operation Manual.

- Step 1: Follow [Shutdown Procedure](#), page [15-1](#).
- Step 2: Fuel filters are located inside of engine compartment.
- Step 3: Place suitable catch containers underneath.
- Step 4: Slowly relieve pressure from fuel system.
- Step 5: Replace primary (1) and pre-fuel filter (2).
- Step 6: Bleed air out of fuel system.
- Step 7: Start engine and check for leaks.



## FUEL FILTER - REPLACE (GM)

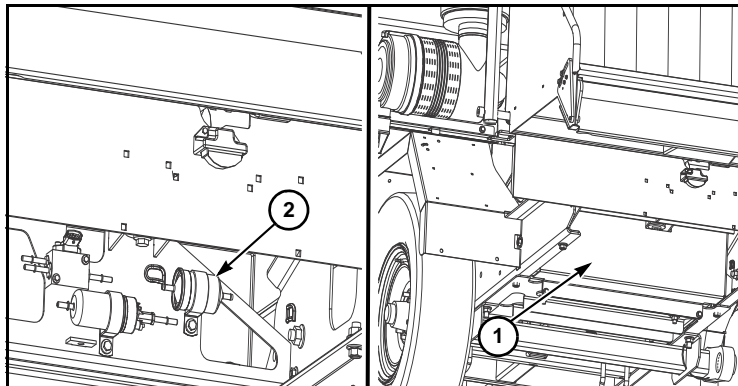


**WARNING:** Fuel and fumes can explode and burn.

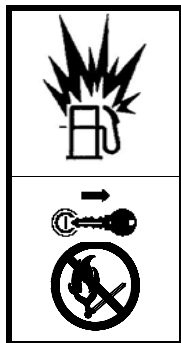
Shut off engine before refueling. No flame. No smoking.

Replace in-line fuel filter every 250 hours or sooner if needed. Refer to the Engine Operation Manual.

- Step 1: Follow [Shutdown Procedure](#), page [15-1](#).
- Step 2: Fuel filter is located behind shield (1) at back side of fuel tank.
- Step 3: Remove shield and hardware.
- Step 4: Place suitable catch containers underneath.
- Step 5: Push button on the side of fuel hose connector and slowly relieve pressure from fuel system.
- Step 6: Drain fuel hoses.
- Step 7: Replace fuel filter (2).
- Step 8: Snap hose connectors to fuel filter, insure positive lock.
- Step 9: Start engine and check for leaks, install shield and hardware.



## FUEL FILTERS - REPLACE (CUMMINS)



**WARNING:** Fuel and fumes can explode and burn.

Shut off engine before refueling. No flame. No smoking.

- Replace fuel filters every 250 hours or sooner if dirty.
- Refer to the Engine Operation Manual for instructions

**Step 1:** Follow [Shutdown Procedure](#), page [15-1](#).

**Step 2:** Fuel filter (1) is located inside of engine compartment.

**Step 3:** Close fuel supply valve, and clean outside of fuel filter.

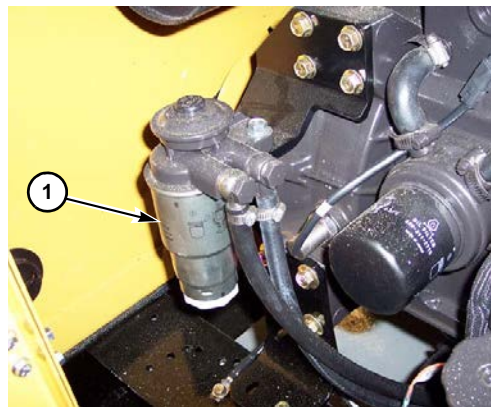
**Step 4:** Place suitable catch containers underneath.

**Step 5:** Slowly relieve pressure from fuel system.

**Step 6:** Replace filter.

**Step 7:** Bleed air out of fuel system.

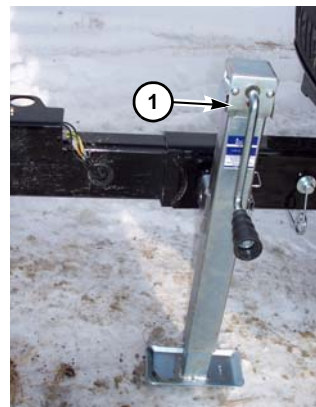
**Step 8:** Start engine and check for leaks.





## JACK - LUBRICATE

- (1) One shot grease..... one fitting

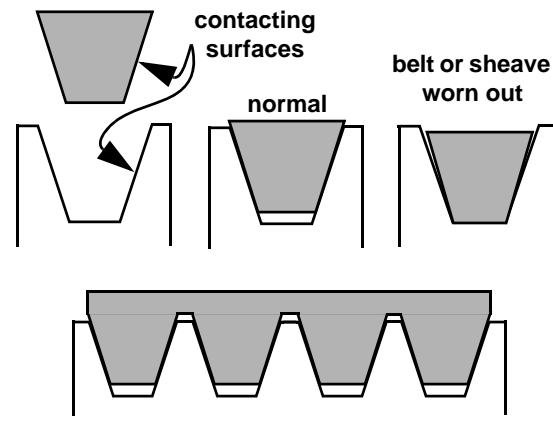


## CUTTER BELT WEAR - CHECK

The sheaves and belt transmit power through friction of the sides of the belt vee with the sides of the vee in the sheave. The belt does not make contact with the bottom of the vee in the sheave.

On a newer belt and sheave in good condition, the walls of each vee in the sheave will be polished, but the bottom of the vee and the tops of the ridges between the vees will not be polished.

Since the chipping environment generates a lot of abrasive dust, the walls of the vees on the sheaves may be subject to greater than normal wear. Always inspect the side of the vee with a straightedge. If the wall is dished out more than 1/32" (1 mm) or if belt contacts the bottom of the sheave (see lower illustration), replace the sheave and/or belt. Refer to "Maintenance - 500 Service Hours," [page 50-1](#). Refer to "Cutter Drum Drive Belt - Replace," [page 50-14](#).



## HYDRAULIC FLUID FILTER - REPLACE

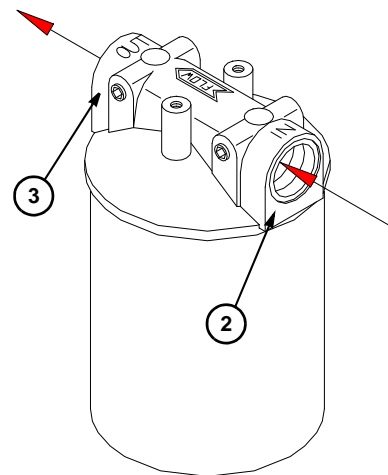
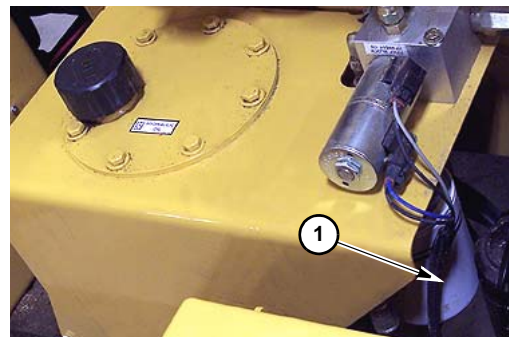
The hydraulic fluid filter (1) will need to be replaced earlier if the machine is in storage for a long period of time, such as through the winter.

- Step 1:** Thoroughly clean area around filter to keep contaminants out of the hydraulic system.
- Step 2:** Use a filter wrench to turn the filter counterclockwise and remove.
- Step 3:** Clean the filter head surface.
- Step 4:** Apply thin film of oil to gasket of new filter.
- Step 5:** Install filter onto filter head. Tighten clockwise by hand until it contacts filter head.

**NOTICE:** The filter head has a built-in relief which will open and bypass the filter element if the hydraulic fluid is cold or the filter is dirty or clogged. The filter head has an arrow or “IN” (2) and “OUT” (3) stamped in the head to indicate correct positioning for the direction of oil flow. If replacing the filter head, ensure new filter head is positioned correctly.

- Step 6:** Tighten with filter wrench an additional 1/2 to 3/4 turn.
- Step 7:** Follow [Starting Procedure](#) (refer to the [Operator's Manual](#)), and cycle feed roller to pressurize system. Check for leaks.
- Step 8:** Follow [Shutdown Procedure](#), page 15-1. Check hydraulic fluid level. Check for leaks around filter.

**NOTICE:** If leaks are found, tighten filter only enough to stop the leak.



## AUTOMATIC BRAKE CONTROLLER WITH MANUAL OVERRIDE (OPTION) - CHECK

The instructions given below are for the Warner Electric 12-Volt Automatic Brake Controller with Manual Override (P/N 1100-40). If your towing vehicle is already equipped with an electric brake controller, it must be capable of automatic and manual brake application.

- Some automatic controllers accomplish this by tapping into the brake line of the towing vehicle.
- Other controllers are pendulum-operated which engages the brake by sensing the deceleration force of the towing vehicle.

Do not use a brake controller that is purely a manually operated controller. If your towing vehicle is equipped with a manually operated controller, remove it and install one that can be applied both automatically and manually.

### Brake Controller - Adjust

The controller is properly adjusted when there is:

- a slight lead in trailer braking over vehicle braking
- no sensation of the trailer pushing or pulling the towing vehicle during a stop

**Step 1:** Install and test controller.

**NOTICE:** A slight electrical odor or smoking is normal during the break-in period.

**Step 2:** Set adjustment knob.

“More” . . . . . increases trailer braking

“Less” . . . . . decreases trailer braking

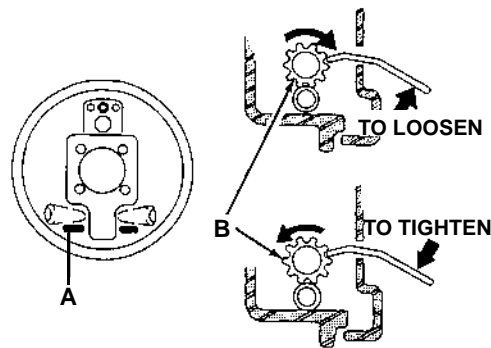
- This adjustment does not affect maximum braking capacity of the trailer brakes.

## BRAKES - ADJUST (5200 LB/7000 LB DEXTER AXLE)

- Step 1:** Jack up one wheel until it is off the ground. Block machine.
- Step 2:** Remove dirt plug (A) in backing plate.
- Step 3:** While spinning the wheel, turn adjuster screw (B) clockwise until the wheel has a heavy drag. Then turn adjuster screw counterclockwise only until the wheel turns freely.

**NOTICE:** Rotate drum only in the direction of forward rotation when adjusting the brakes. The adjuster screw may be turned with a screwdriver blade or with a standard brake adjusting tool.

- Step 4:** Install dirt plug.
- Step 5:** Remove blocking and jack.
- Step 6:** Repeat Steps 1–5 for the other brake.



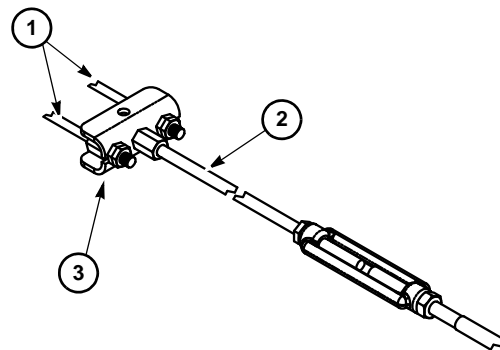
## BRAKES - DEXTER 5200 LB AXLE NEV-R-ADJUST

The brakes automatically rotate an adjuster assembly to close the gap caused by lining wear. This eliminates the need for manual brake adjustment.

- Nev-r-adjust axle can be identified by a rubber cap on the end of axle spindle end caps.

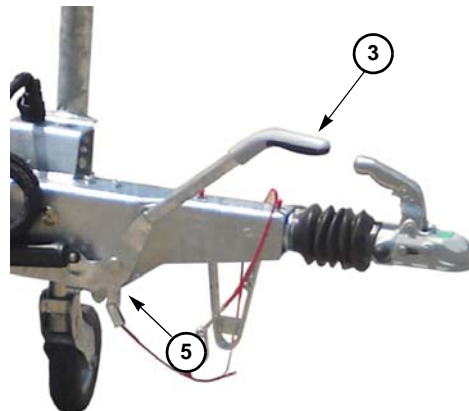
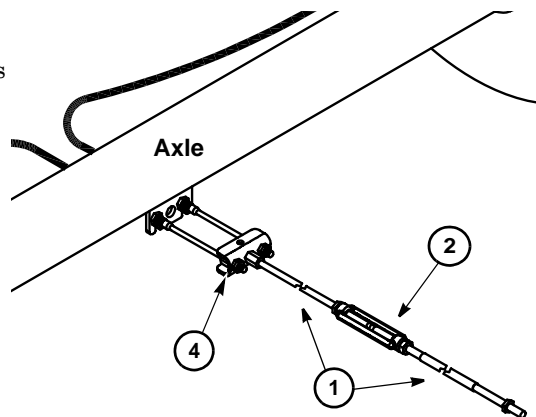
## BRAKES - ADJUST (EUROPEAN KNOTT AXLE)

- Step 1:** Ensure machine is on level ground and then jack up machine to raise wheels off the ground.
- Step 2:** Support machine with suitable jack stands/blocking.
- Step 3:** Release handbrake and ensure draw tube is fully extended.
- Step 4:** Ensure brake cables (1) and brake rod are not under tension. If necessary, loosen brake rod (2) at balance bar (3).
- Step 5:** During adjustment turn wheel in just the FORWARD direction (clockwise) at all times.
- Step 6:** Turn adjuster bolt (4) located at top of backplate, in a clockwise direction until wheel can no longer be turned or until it can only be turned or becomes very hard to turn.
- Step 7:** Loosen adjuster bolt (4) by turning counterclockwise (approximately 1/2 turn) until wheel turns freely. Slight dragging noises, which do not impede the motion of the wheel are normal.
- Step 8:** Repeat adjustment procedure on opposite wheel/brake assembly.



## PARK BRAKE - ADJUST (EUROPEAN KNOTT AXLE)

- Step 1:** Adjust the length of brake rods (1) using turnbuckle (2) so that there is neither play or tension on it.
- Step 2:** Firmly actuate handbrake lever (3) repeatedly in order to re-seat braking components.
- Step 3:** Check position of cable balance bar (4) to ensure it is perpendicular to direction of travel.
- Step 4:** Check operation of handbrake lever (3). Over center lever resistance begins about 10–15 mm above over center point.
- Step 5:** Ensure all hardware is tight on rods, turnbuckle and balance bar
- Step 6:** With handbrake lever (3) released, test brakes with tow vehicle on a short drive to ensure proper operation.  
Under normal braking a maximum of two thirds of the overall drawtube should be used.
- Step 7:** After road test, recheck for play on brake rods and ensure there is no play at overrun lever (5), readjust if necessary.



## WHEEL BEARINGS - GREASE (DEXTER 5200 LB/7000 LB AXLE EZ-LUBE)

**NOTICE:** Grease bearings every 250 hours or 4000 miles whichever comes first.

Repack wheel bearing and replace seal every 12,000 or yearly whichever comes first.

Refer to “Wheel Bearings - Grease/Repack (Dexter 5200 lb/7000 lb Axle EZ-Lube),”  
[page 65-2](#).

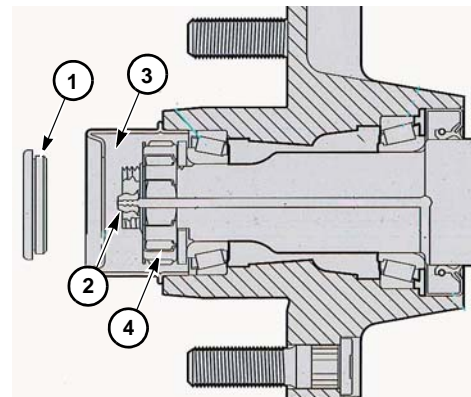
**Step 1:** Remove rubber plug (1) on end of spindle housing end cap (3).

**Step 2:** Using standard grease gun, grease fitting (2) while rotating hub/drum until grease purges from bearing area inside of end cap (4).

**NOTICE:** It is not recommend to use pneumatic powered (air) grease guns, this could damage seal or push seal out of hub and brakes could become unusable.

**Step 3:** Install rubber plug and secure.

Repeat procedures for both sides of axle.



This page intentionally left blank.



# Section 50: Maintenance - 500 Service Hours

## ENGINE MAINTENANCE - (DEUTZ)

- Fuel prefilter drain/replace if needed.
- Check battery electrolyte levels and clean terminals. Refer to “Battery Electrolyte Levels and Terminals - Check/Clean,” [page 50-10](#).
- Replace air cleaner elements.
- Clean radiator fins.
- Cooling System - Check

Refer to the Engine Operation Manual supplied with the machine for instructions.

## ENGINE MAINTENANCE - (CATERPILLAR)

- Replace fuel filter.
- Obtain initial cooling system coolant sample (level 2).
- Check battery electrolyte levels and clean terminals.
- Replace air cleaner elements.
- Check engine protective devices.
- Inspect/replace hoses and clamps.
- Clean radiator.

Refer to the Engine Operation Manual supplied with the machine for instructions.

## ENGINE MAINTENANCE - (CUMMINS)

- Fuel Supply Lines - Vent
- Injection Pump - Vent
- Cooling System - Check

Refer to the Engine Operation Manual supplied with the machine for instructions.

## ENGINE MAINTENANCE - (GM)

- Check battery electrolyte levels and clean terminals.
- Refer to “Battery Electrolyte Levels and Terminals - Check/Clean,” [page 50-10](#).
- Replace air cleaner elements.
- Clean radiator fins.
- Cooling System - Check

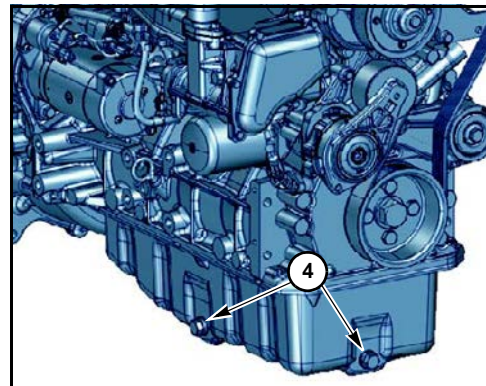
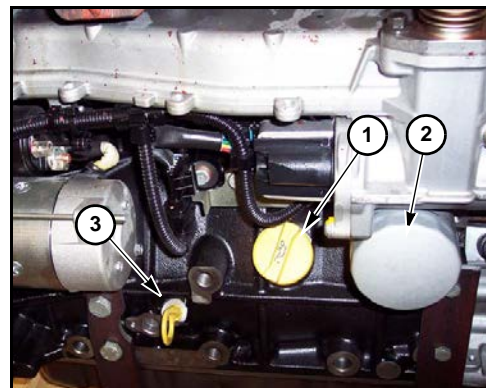
Refer to the Engine Operation Manual supplied with the machine for instructions.

## ENGINE OIL AND FILTER - CHANGE/REPLACE (DEUTZ)

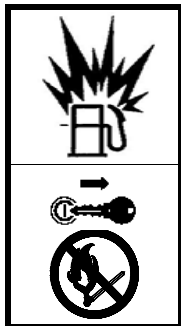
**NOTICE:** Change engine oil every 500 hours.

Refer to the Engine Operation Manual supplied with each machine for instructions.

- (1) Oil Fill Cap
- (2) Oil Filter
- (3) Oil Dipstick
- (4) Oil Drain Plugs



## FUEL FILTERS - REPLACE (CATERPILLAR)



**WARNING:** Fuel and fumes can explode and burn.

Shut off engine refueling. No flame. No smoking.

- Replace fuel filter (1) every 500 hours or sooner if dirty.

**NOTICE:** Relieve pressure from lines, refer to Engine Operation Manual.

**Step 1:** Follow [Shutdown Procedure](#), page [15-1](#).

**Step 2:** Close fuel supply valve, and clean outside of fuel filter assembly.

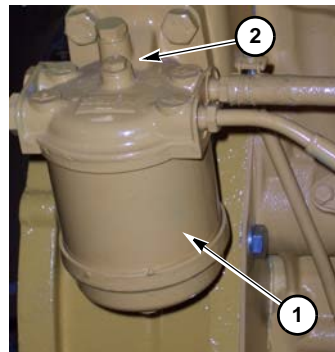
**Step 3:** Place suitable catch containers underneath.

**Step 4:** Remove screw (2) and slowly relieve pressure from fuel system.

**Step 5:** Replace fuel filter.

**Step 6:** Check that seals are in place, reassemble and tighten screw.

**Step 7:** Bleed air out of fuel system, start engine and check for leaks.

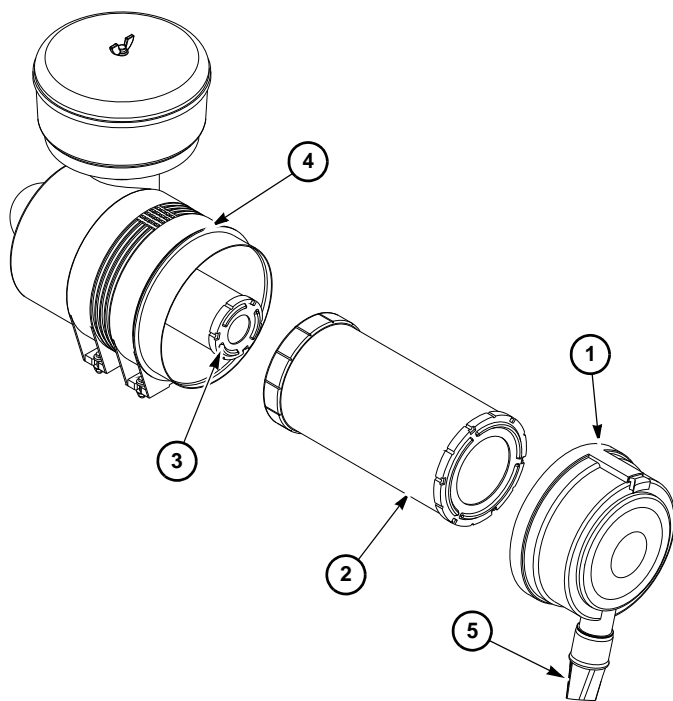


## AIR CLEANER ELEMENTS - REPLACE (DEUTZ/CUMMINS/GM)

Primary air cleaner element must be replaced when air cleaner restriction indicator reaches red area.

*To replace engine air filter element(s):*

- Step 1:** Remove air cleaner end cover (1).
- Step 2:** Remove dirty primary element (2).
- Step 3:** Remove dirty secondary element (3).
- Refer to the Engine Operation Manual that is supplied with each machine to determine the make and number of the correct replacement filter.
- Step 4:** Check replacement air cleaner elements for damage.
- Step 5:** Check air cleaner housing (4) for damage and debris.
- Step 6:** Check evacuator valve (5) for wear or damage.
- Step 7:** Install new secondary element (3). Install new primary element (2). Ensure end of element with gasket is installed against closed end of air cleaner assembly, and is seated properly.
- Step 8:** Install air cleaner end cover (1); ensure all fasteners and/or clamps are tight.



## AIR CLEANER ELEMENTS - REPLACE (CATERPILLAR)

Primary air cleaner element must be replaced when air cleaner restriction indicator reaches red area.

*To replace engine air filter element(s):*

**Step 1:** Remove air cleaner end cover (1).

**Step 2:** Remove dirty primary element (2).

**Step 3:** Remove dirty secondary element (3).

Refer to the Engine Operation Manual that is supplied with each machine to determine the make and number of the correct replacement filter.

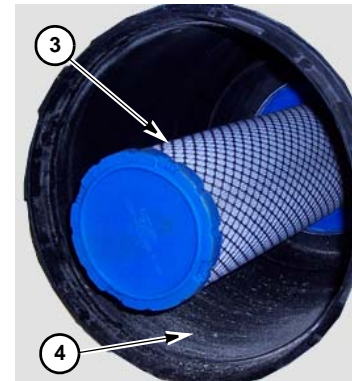
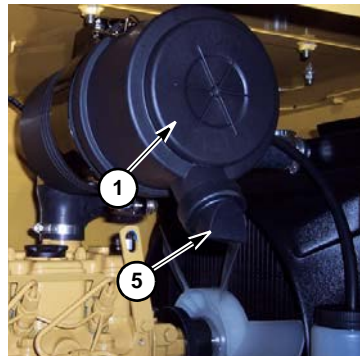
**Step 4:** Check replacement air cleaner elements for damage.

**Step 5:** Check air cleaner housing (4) for damage and debris.

**Step 6:** Check evacuator valve (5) for wear or damage.

**Step 7:** Install new secondary element (3). Install new primary element (2). Ensure end of element with gasket is installed against closed end of air cleaner assembly, and is seated properly.

**Step 8:** Install air cleaner end cover (1); ensure all fasteners and/or clamps are tight.



## BALL COUPLER - LUBRICATE AND INSPECT

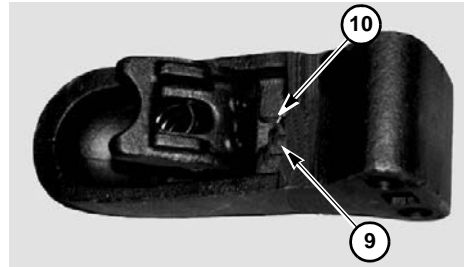
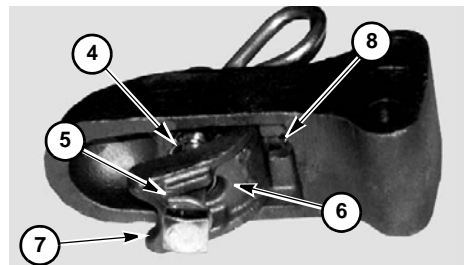
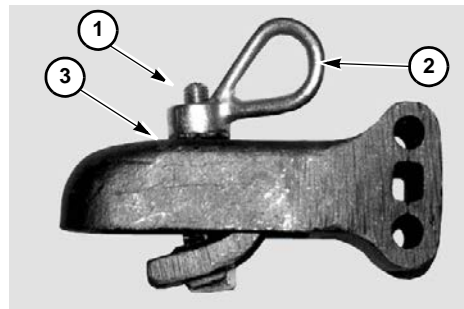
- Oil threads of bolt (1) and loop nut (2).
- Check ribs around bolt hole (3) for wear.
- Replace any missing, broken, damaged, or worn parts.
- Do not use coupler if spring (4), lock washer (5), or clamping lip (6) are missing or assembled incorrectly.
- Ensure square head of the bolt (7) is in the square cavity of the clamping lip.
- The hitch must be properly assembled as shown.
- Clamping lip (6) must be engaged at location (8). If it is not properly engaged:

**Step 1:** Fully disassemble the hitch.

**Step 2:** Engage tongue (9) of the clamping lip into recess (10).

**Step 3:** Hinge the lip forward to its operating position and assemble hitch.

**NOTICE:** Only use genuine replacement parts. Do not make any substitutions for the loop nut or the square head bolt.



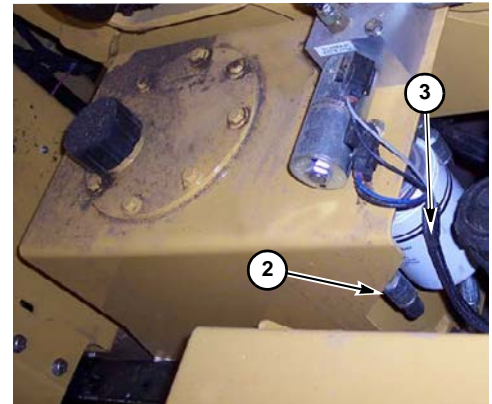
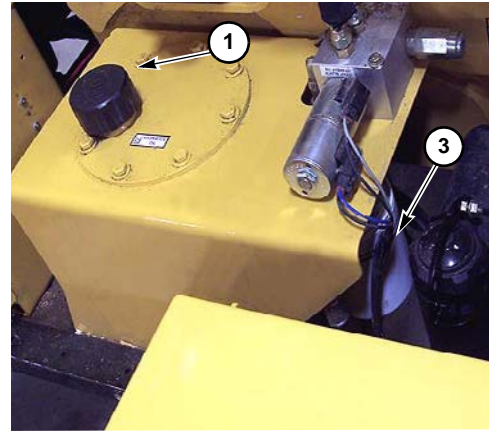
## HYDRAULIC FLUID - CHANGE

Change hydraulic fluid earlier if fluid smells burnt, appears contaminated, or after major repair.

- Step 1:** Remove fill cap (1).
- Step 2:** Remove return line hose (2) from bottom of tank to drain oil.
- Step 3:** Replace hydraulic filter (3). Refer to “Hydraulic Fluid Filter - Replace,” [page 45-6](#).
- Step 4:** Remove, clean, and inspect hydraulic fluid strainer. Refer to “Hydraulic Fluid Strainer - Inspect,” [page 50-9](#). Perform all steps.
- Step 5:** Clean, inspect, and install hoses.
- Step 6:** Fill hydraulic tank and install fill cap. Refer to “Lubricants,” [page 75-1](#).

**NOTICE:** The hydraulic fluid must be free of bubbles. Bubbles are trapped air that is entering the hydraulic system.

- Step 7:** Operate hydraulic system for a few minutes.
- Step 8:** Shut off engine and check fluid level.

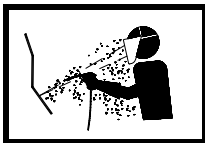
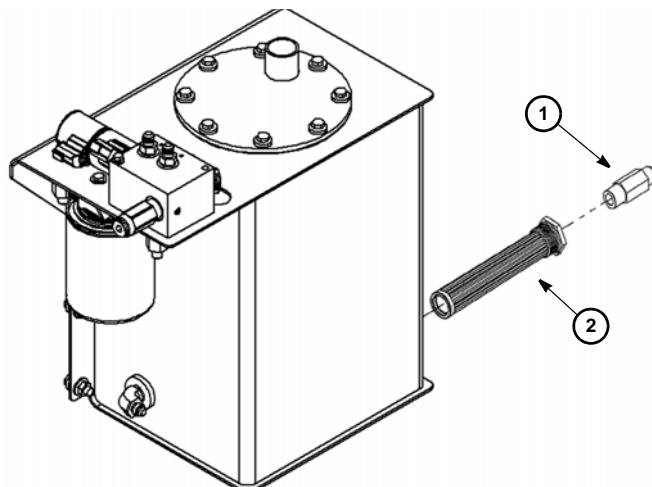




## Hydraulic Fluid Strainer - Inspect

Inspect and service strainer after draining the tank when you change the hydraulic fluid.

- Step 1:** Remove fitting (1). Turn strainer (2) counterclockwise and remove it from the tank.
- Step 2:** Clean strainer with a petroleum base paint thinner or other good cleaning solvent. Scrub strainer with a small soft-bristled brush. Look for lacquers which may have formed as a result of hot spots in the hydraulic system.



**WARNING:** Eye injury possible. Wear a face shield when using compressed air to clean or dry solvent-coated parts.

- Step 3:** Rinse strainer with clean solvent or thinner. Use compressed air to blow it clean.
- Step 4:** Use a suitable thread sealant on fitting and strainer.
- Step 5:** Install and tighten strainer and fitting.

## BATTERY ELECTROLYTE LEVELS AND TERMINALS - CHECK/CLEAN



**WARNING:** Battery fumes are flammable and can explode. Keep all burning materials away from battery. Battery explosion can blind. Acid can blind and burn. Tools and cable clamps can make sparks.

Do not smoke. Shield eyes and face. Read instructions.

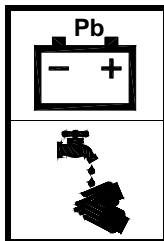
- Use a flashlight to check electrolyte level.
- Work in a well-ventilated area.
- Avoid breathing fumes from battery.
- Avoid contact with skin, eyes, or clothing.
- Keep flame and sparks away, and do not smoke.
- Keep out of reach of children.
- Do not short across battery terminals or allow tools to short from battery terminals to frame.
- Do not jump-start or charge a battery with frozen electrolyte.

*In case of acid contact:*

**External:** Flush with plenty of water. If eyes have been exposed, flush with water for 15 minutes and get prompt medical attention.

**Internal:** Drink large quantities of water or milk, follow with milk of magnesia, beaten egg, or vegetable oil. Call a physician immediately.

## Battery Electrolyte Levels and Terminals - Check



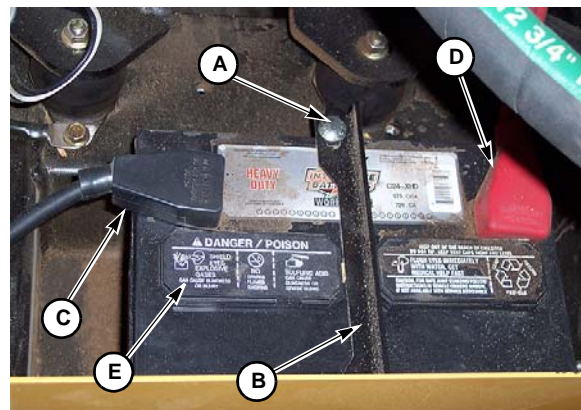
**WARNING:** Battery post, terminals, and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer and reproductive harm.

Wash hands after handling.

- Step 1:** Unlatch and open engine compartment door to access battery.
- Step 2:** Remove the two bolts (A) from the hold-down bracket (B) and remove bracket.
- Step 3:** Remove negative (-) cable (C) first. Then remove positive (+) cable (D). Remove battery.
- Step 4:** If equipped, remove cell caps (E).
- Step 5:** Fill each cell with distilled water.

**NOTICE:** If the battery is under-filled, the electrolyte will be too concentrated, making the plates deteriorate more rapidly. The low level also exposes the tops of the plates, letting them harden and become chemically inactive.

- Add distilled water, but do not overfill.
- In freezing weather, run the engine for a few minutes immediately after filling the battery to allow proper mixing of the water and electrolyte.
- Never add acid unless electrolyte is lost by spilling.
- If the battery uses too much water, check it for overcharging.

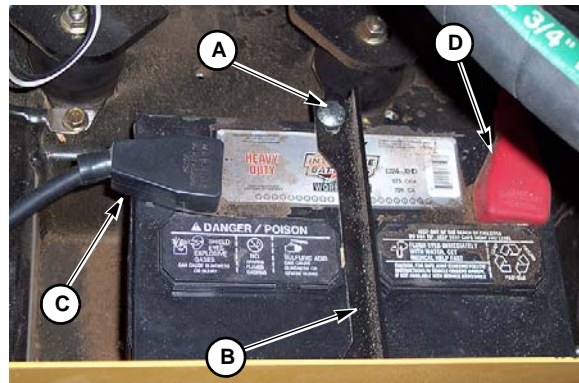
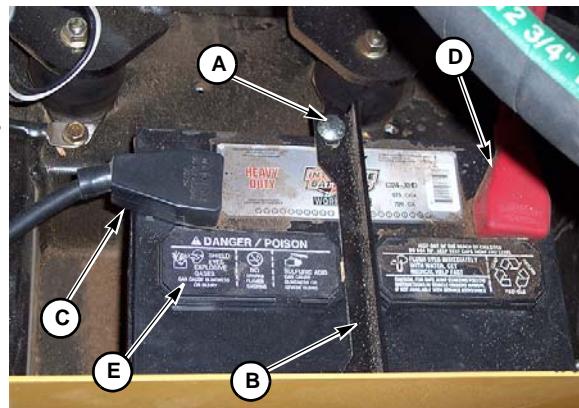


- Step 6:** Install cell caps **(E)**.
- Step 7:** Replace battery.
- Step 8:** Install positive (+) cable **(D)** first. Then install negative (-) cable **(C)** and tighten. Check that the red cap over positive cable clamp is properly installed.
- Step 9:** Install hold-down bracket **(B)** using the two bolts **(A)** and tighten.
- Step 10:** Close and latch engine compartment door.

## Battery Terminals - Clean

- Step 1:** Unlatch and open engine compartment door to access battery.
- Step 2:** Remove the two bolts **(A)** from the hold-down bracket **(B)** and remove bracket.
- Step 3:** Remove negative (-) cable **(C)** first. Then remove positive (+) cable **(D)**.
- Step 4:** Clean terminals and clamps with a stiff wire brush.
- Step 5:** Apply a light coating of petroleum jelly around the base of each terminal.
- Step 6:** Install hold-down bracket **(B)** and secure with the two bolts **(A)**.
- Step 7:** Install positive (+) cable **(D)** first. Then install negative (-) cable **(C)** and tighten. Check that red cap over the positive cable clamp is properly installed.
- Step 8:** Close and latch engine compartment door.

Keep top of the battery clean. If necessary, wash it with a baking soda solution, then rinse with clean water. Do not let any baking soda solution enter the battery.



## FEED TABLE CURTAINS - REPLACE

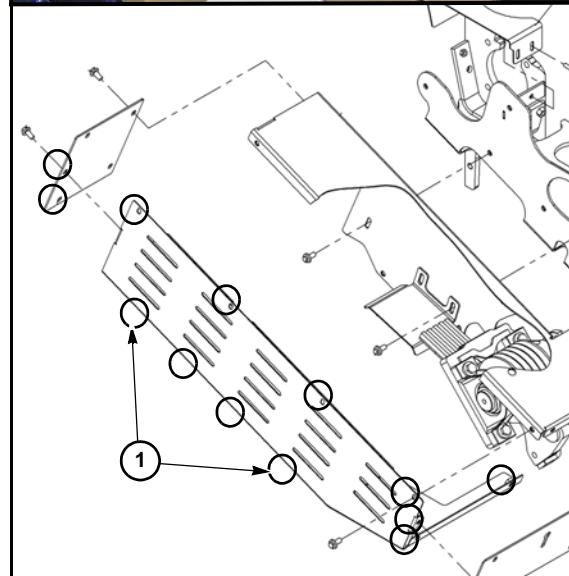
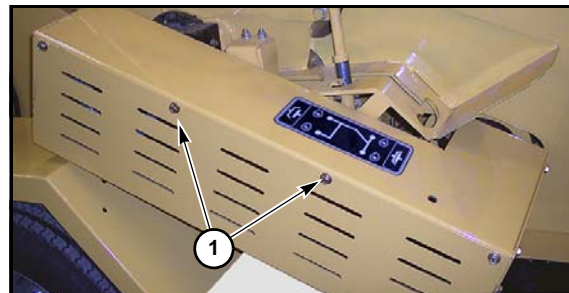
Do not operate brush chipper without barrier curtains (1) in place. The barrier curtains help reduce the amount of chipped material that may be ejected toward the operator. Replace curtains every 500 hours, more often if damaged or missing.



## CUTTER DRUM DRIVE BELT - REPLACE

Replace cutter drive belt every 500 hours, more often if damaged or worn.

**Step 1:** Remove mounting bolts (1) and front panel of belt shield. (See illustration at lower right for circled bolt locations.)



**Step 2:** Place *Throttle Lever/Cutter Engage* in DISENGAGED.

**Step 3:** Loosen two bolts (2) and panel (3).

**Step 4:** Press down on bottom side of belt and remove it from grooves on sheave.

If belt is difficult to remove, turnbuckle (A) may require loosening. Retighten turnbuckle after adjusting belt tension in Step 7.

**Step 5:** Remove belt; install new belt.

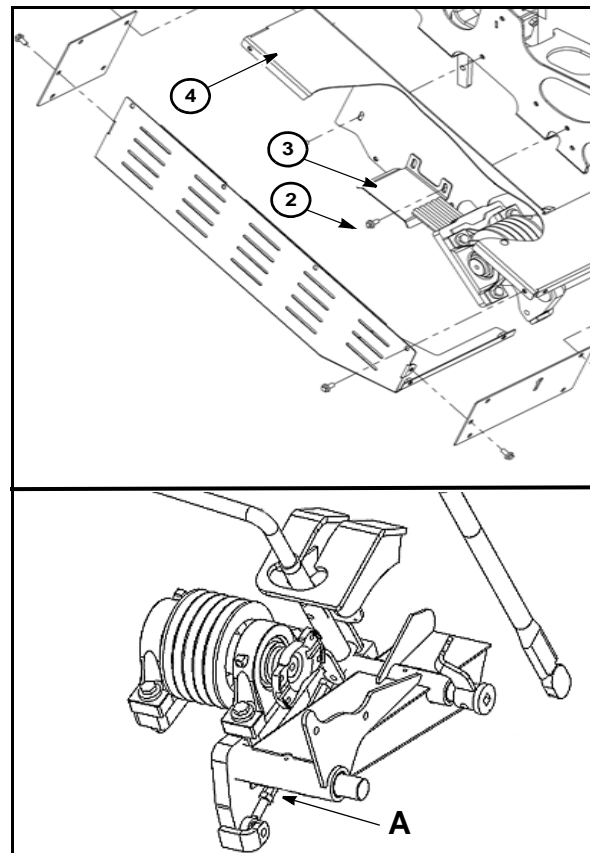
**Step 6:** Adjust belt tension. Refer to “Cutter Drum Drive Belt Tension - Check/Adjust,” [page 30-3](#).

**Step 7:** Adjust top panel (4) 1/8" (3 mm) above engaged belt. Tighten panel bolts.

**NOTICE:** Ensure belt does not contact the top panel (4).

**Step 8:** Install panel (3) 5/8" (16 mm) below engaged belt. Tighten bolts (2).

**Step 9:** Install front panel of belt shield and mounting bolts.



This page intentionally left blank.



# Section 55: Maintenance - 1000 Service Hours

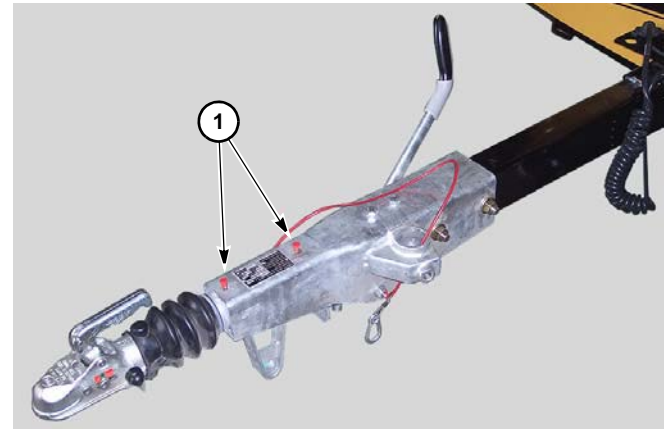
## ENGINE MAINTENANCE AND SYSTEM CHECK

- Check engine systems.
- Replace alternator and fan belts.
- Inspect/adjust engine valve lash.

Refer to the Engine Operation Manual supplied with the machine for instructions.

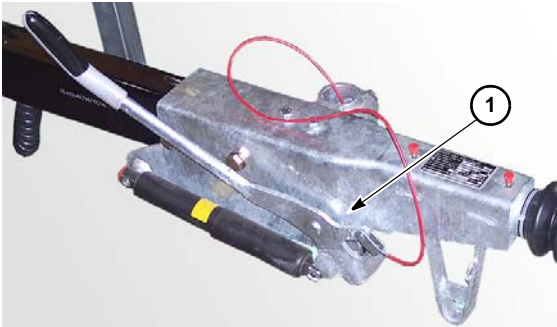
## SURGE BRAKE ACTUATOR - GREASE (EUROPEAN ONLY)

(1) Four shots ..... two fittings



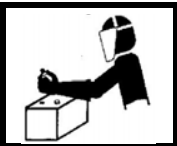
**PARK BRAKE LEVER - GREASE  
(EUROPEAN ONLY)**

(1) Two shots.....one fitting



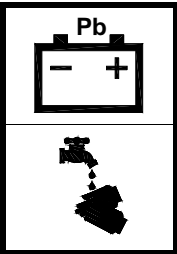
**BATTERY - REPLACE**

The machine has a 12-volt electrical system. Replacement battery must meet standard battery specifications provided. “Machine Specifications,” [page 75-4](#) Replace battery every 1000 hours, or more frequently if needed.



**WARNING:** Tools and cable clamps can make sparks.

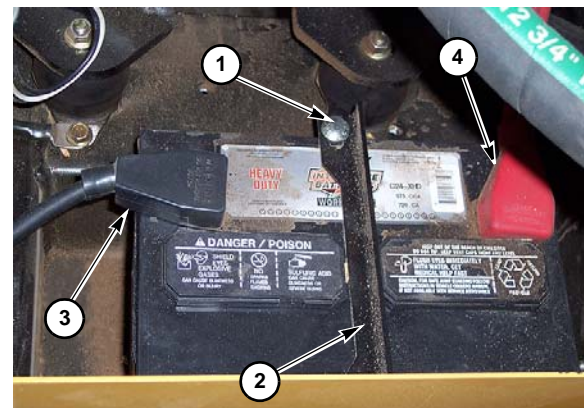
Shield eyes and face.



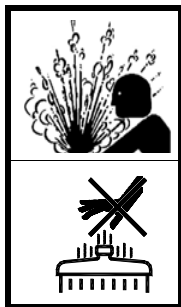
**WARNING:** Battery post, terminals, and related accessories contain lead and lead compounds, chemicals known to the state of California to cause cancer and reproductive harm.

Wash hands after handling.

- Step 1:** Unlatch and open engine compartment door to access battery.
- Step 2:** Remove the two bolts (1) from the hold-down bracket (2) and remove bracket.
- Step 3:** Remove negative (-) cable (3) first. Then remove positive (+) cable (4).
- Step 4:** Lift battery out of compartment.
- Step 5:** Install new battery.
- Step 6:** Apply a light coating of petroleum jelly around base of each terminal.
- Step 7:** Install hold-down bracket (2) and secure with the two bolts (1).
- Step 8:** Install positive (+) cable (4) first. Then install the negative (-) cable (3) and tighten. Check that the red cap over the positive cable clamp is properly installed.
- Step 9:** Close and latch engine compartment door.



## COOLING SYSTEM - DRAIN AND CLEAN



**WARNING:** Hot fluid under pressure can scald.

Allow engine to cool before opening radiator cap.

- Step 1:** Drain old coolant from cooling system.
- Step 2:** Fill radiator with clean water. Check for signs of rust and add a cooling system cleaner to the water if necessary.
- Step 3:** Follow *Starting Procedure* in the *Operator's Manual*. Run engine long enough to be sure the thermostat has opened, allowing the engine and radiator to receive fresh water.
- Step 4:** Follow *Shutdown Procedure*, page 15-1. Allow system to cool, then drain the water.
- Step 5:** Use a 50/50 mixture of coolant and distilled or deionized water fill radiator to within 1/2" (13 mm) of the bottom of the fill pipe. Refer to "Machine Specifications," *page 75-4*.

Recheck radiator after engine has cooled overnight. Fill as necessary. Continue to check each time machine is run and cooled off until radiator remains full.

# Section 60: Additional Engine Maintenance

Refer to the Engine Operation Manual supplied with machine for instructions.

## ENGINE MAINTENANCE - 2000 SERVICE HOURS

- Inspect alternator.
- Replace engine crankcase breather.
- Inspect engine mounts.
- Inspect starting motor.
- Obtain cooling system coolant sample (level 2).
- Replace spark plugs (GM).

## ENGINE MAINTENANCE - 3000 SERVICE HOURS

- Change cooling system coolant.
- Replace cooling system coolant temperature regulator.
- Clean engine.
- Inspect water pump.

## **ADDITIONAL ENGINE MAINTENANCE**

### **Maintenance - 6000 Service Hours**

- Add cooling system coolant.

### **Maintenance - 6000 Service Hours**

- Change cooling system coolant.

# Section 65: Maintenance - As Required

## ENGINE MAINTENANCE

- Check/clean engine.
- Prime fuel system (Caterpillar/Cummins/Deutz).
- Check severe service application

An Engine Operation Manual is supplied with each machine. Refer to the manual for service requirements.

## ENGINE AREA - CLEAN

Inspect and clean engine area frequently to prevent fires. Always clean up spilled fuels and lubricants, including debris and mulch which are fuel or oil contaminated. Use appropriate methods to dispose of contaminated materials.

## ENGINE SYSTEMS - CHECK

Refer to the Engine Operation Manual supplied with each machine for service requirements.

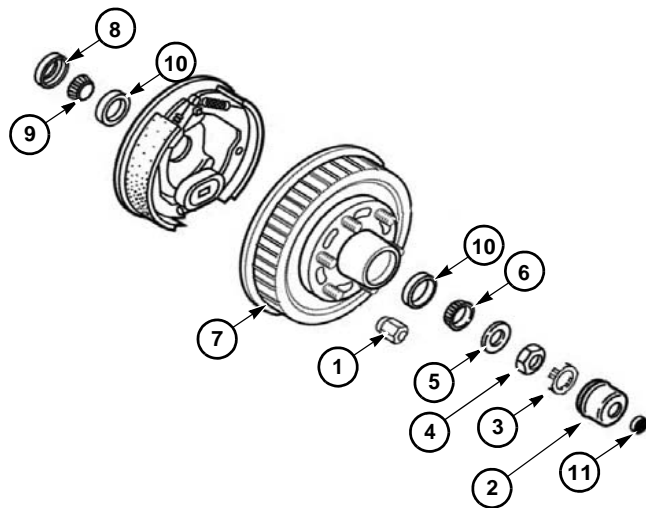
## WHEEL BEARINGS - GREASE/REPACK (DEXTER 5200 LB/7000 LB AXLE EZ-LUBE)

**NOTICE:** Re-Pack bearings and replace seal every 12,000 miles or yearly, whichever comes first.

- Step 1:** Secure machine so it cannot roll.
- Step 2:** Jack up machine until one wheel is off the ground and secure with suitable jack stands or blocks.
- Step 3:** Remove lug nuts (1).
- Step 4:** Remove wheel and rim.
- Step 5:** Remove grease cap (2), nut retainer (3), Nut (4), washer (5) and outer bearing (6).
- Step 6:** Remove hub/rotor (7). If hub is tight, use a wheel puller for removal.
- Step 7:** Remove seal (8) from back side of hub and discard.
- Step 8:** Remove inner bearing (9).
- Step 9:** Wash cone bearings and inside the hub with solvent and wipe clean.
- Step 10:** Inspect bearings and bearing cups (10), replace if damaged or worn.

**NOTICE:** When repacking, be sure grease is worked into the roller retainers from the edge to fill the entire bearing with grease.

- Step 11:** Install inner bearing (9), new seal (8) (refer to [Parts Manual](#)).
- Step 12:** Inspect brakes liners and hub for wear or damage, replace if needed.
- Step 13:** Slide hub/rotor (7) onto the spindle. When sliding hub onto spindle, watch that the outside bearing (9) does not work out of hub.





**Step 14:** Install outside bearing (6), align washer (5) and thread on nut (4).

**Step 15:** Rotate hub assembly slowly while tightening the spindle nut to approximately 50 ft-lb (68 Nm).

**Step 16:** Loosen the spindle nut to remove torque, finger tighten nut until just snug.

**Step 17:** Align the nut retainer (3) to spindle flat and snap into place.

**Step 18:** Reinstall grease cap (2).

**Step 19:** Remove rubber plug (11) from end of cap (2).

**Step 20:** With a standard grease gun, finish filling the hub with grease while rotating hub/drum until grease expels from outer bearing inside of cap (2).

**NOTICE:** It is not recommend to use pneumatic powered (air) grease guns, this could damage seal or push seal out of hub and brakes could become unusable.

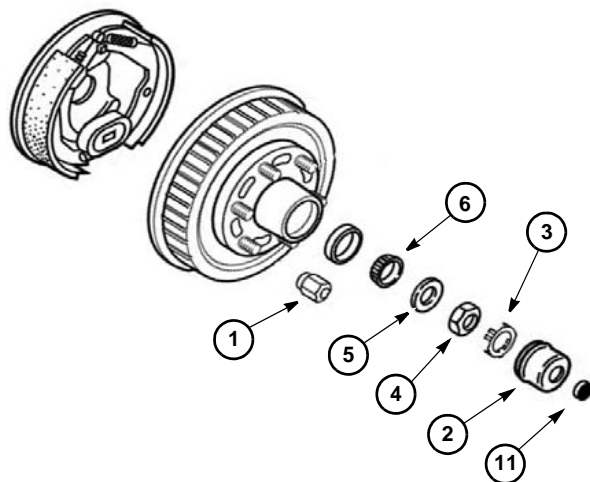
**Step 21:** Reinstall rubber cap (11).

**Step 22:** Mount wheel and rim.

**Step 23:** Install lug nuts, torque to 210 ft-lb (285 Nm).

**Step 24:** Remove jackstands or blocks and lower jack.

**Step 25:** Repeat procedure for the other wheel.

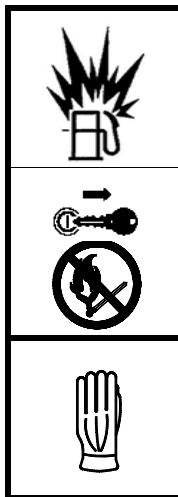


## AIR CLEANER - INSPECT

Inspect air cleaner periodically to maintain maximum engine protection and maximum service life.

- Air cleaner mounting bolts and clamps must be tight to hold the air cleaner securely.
- Check for cracks or other damage to the air cleaner which could allow unfiltered air to enter the engine.
- Inspect air transfer hose between the air cleaner and the engine to be sure all the clamps are tight, all flange joints are tight, and there are no cracks in the hose.
- Ensure inlet is free of obstructions.
- Check rubber evacuator valve on bottom of filter housing for cracks or tears.

## PROPANE CYLINDER - REMOVE AND INSTALL (GM DUAL FUEL OPTION)



**WARNING:** Fuel and fumes can explode and burn.

**WARNING:**  
Shut off engine before refueling. No flame. No smoking.

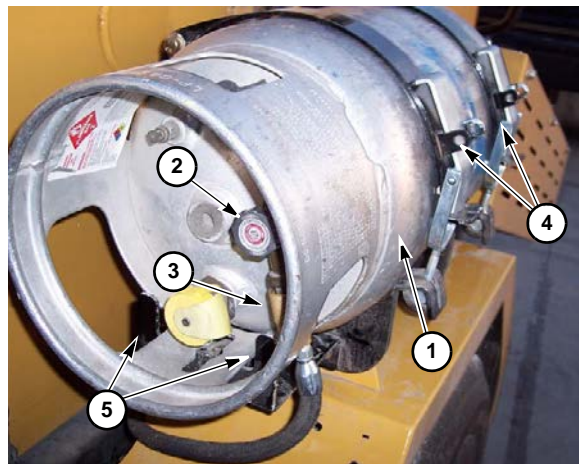
**WARNING:**  
Wear gloves.

### General Propane Safety Information

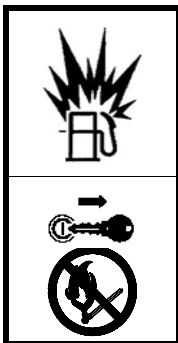
- Wear protective gloves.
- No smoking when changing cylinders.
- Do not change cylinders with engine running.
- Handle cylinders carefully. Do not drop, throw, slide or drag cylinders.
- Ensure pressure relief valve has protective cover.
- Use good lifting practices when handling cylinders.
- Should a sudden release of propane gas develop that can not be easily stopped, promptly remove cylinder to well ventilated outside area away from source of ignition.

*To exchange propane cylinders:*

- Step 1:** Shut fuel valves **(2)** off at each propane cylinder **(1)**.
- Step 2:** Allow engine to run until fuel in line is consumed and engine stops running.
- Step 3:** Follow [Shutdown Procedure](#), page [15-1](#).
- Step 4:** Wear appropriate protective gloves.
- Step 5:** Slowly turn fuel connecting coupler **(3)** counterclockwise to relieve remaining pressure and remove.
- Step 6:** Release two strap clamps **(4)** from around cylinder.
- Step 7:** Remove empty cylinder and position full cylinder into mount, note orientation to mount tabs **(5)**.
- Step 8:** Secure straps **(4)** to cylinder, adjust if needed and latch.
- Step 9:** Ensure that cylinder valve is closed.
- Step 10:** Connect hose coupler **(3)** to cylinder and tighten clockwise.
- Step 11:** Repeat procedures for propane cylinder on other side of machine.
- Step 12:** Open both cylinder valves slowly clockwise 1/4 turn **(2)**.
- Step 13:** Observe for leaks.



## PROPANE FUEL FILTER - REPLACE (GM DUAL FUEL OPTION)

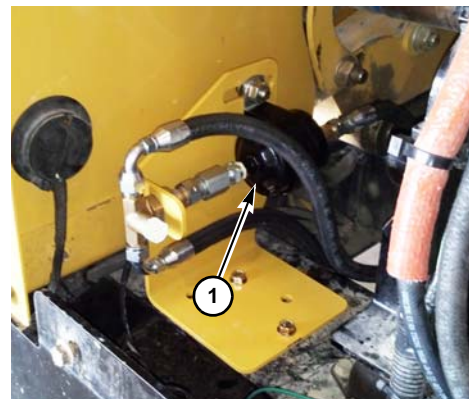


**WARNING:** Fuel and fumes can explode and burn.

Shut off engine before refueling. No flame. No smoking.

Propane fuel filter (1) is located in the engine compartment at the left front corner of engine platform.

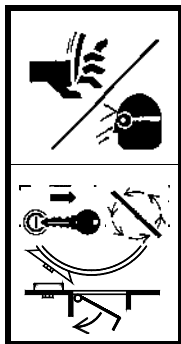
- Step 1:** Shut off valves at propane cylinders. Refer to “Propane Cylinder - Remove and Install (GM Dual Fuel Option),” [page 65-5](#).
- Step 2:** Allow engine to run until fuel in line is consumed and engine stops running.
- Step 3:** Follow [Shutdown Procedure](#), page [15-1](#).
- Step 4:** Loosen fittings and remove filter.
- Step 5:** Apply appropriate pipe sealant to fittings required.
- Step 6:** Install new filter and tighten fittings.
- Step 7:** Turn cylinder valves to *ON* position, apply soapy water to fittings and check for leaks.



## KNIFE-MOUNTING SURFACE - INSPECT

Inspect knife-mounting surface for dirt or debris. Refer to “Knife Mount Surface Inspection,” [page 25-22](#).

## SHEAR BAR - CHECK/ADJUST



**WARNING:** Rotating knives behind cover can cut off hand.  
Thrown objects can strike you.

Stop engine, wait for drum to stop, then open bottom cover.



**WARNING:** Never start engine or operate machine with the cutter drum housing open. Material leaving the housing will be ejected at high speed, resulting in possible injury and blindness.

Check shear bar on the brush chipper every time the drum knives are replaced.

Shear bar wear guidelines:

- It can be turned over and reversed, providing four working edges.
- It can be reground for additional life.

- Replace when there is no adjustment left to move the shear bar toward the knives on the cutter drum.



**WARNING:** Wear gloves when working with the cutter drum knives. Serious cutting injuries will result if contact is made with the knives while adjusting the shear bar.

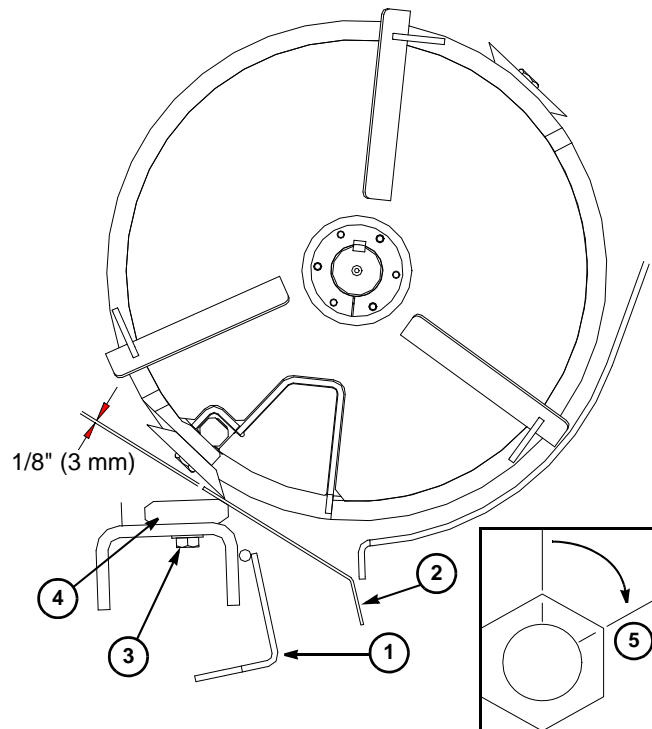
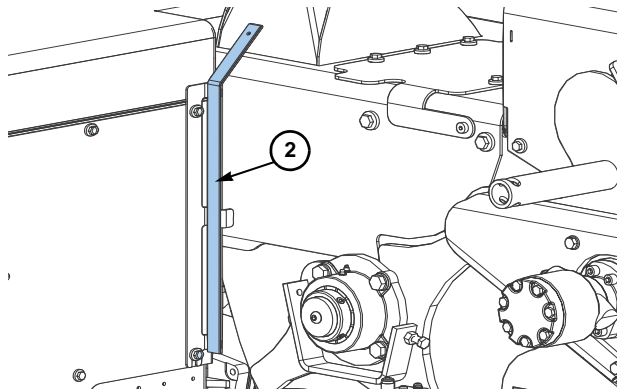
**Step 1:** Under the machine, remove four nuts and bolts that hold access door (1) closed. Access door will drop open.

**Step 2:** Loosen four bolts (3) that hold the shear bar in place.

- This is most easily done with an impact wrench.

**Step 3:** Insert knife gauge (2) between shear bar (4) and edge of the drum knife. Shear bar should fit snugly against the gauge; if it does not, slide shear bar snugly up to gauge.

**NOTICE:** Gap (1/8" or 3 mm) should be equal across full length of both knives.



**Step 4:** Using a hand wrench, snug the bolts **(3)**.

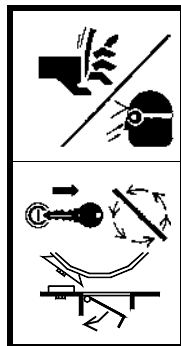
**Step 5:** Finish tightening the bolts by turning them 1/6 of a turn **(5)** or to 210 ft-lb (285 Nm).

**Step 6:** Close access door and replace bolts.

**NOTICE:** Clean and inspect all areas of the shear bar when adjusting or replacing the shear bar.

The shear bar bolts must be checked weekly, even if you do not need to adjust or replace the shear bar. Refer to “Shear Bar Mounting Hardware - Check,” [page 30-2](#).

## SHEAR BAR - REPLACE



**WARNING:** Rotating knives behind cover can cut off hand.  
Thrown objects can strike you.

Stop engine, wait for drum to stop, then open bottom cover.

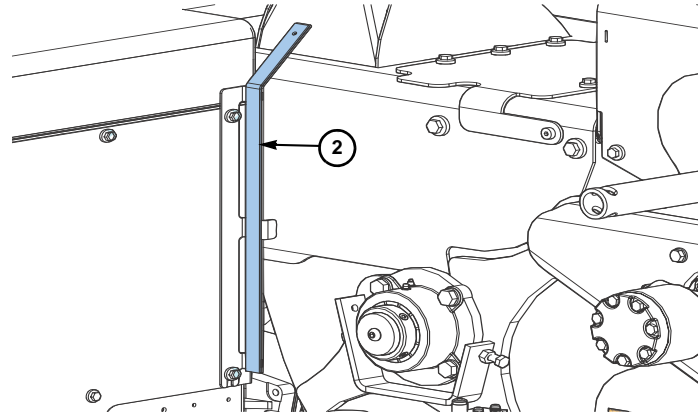
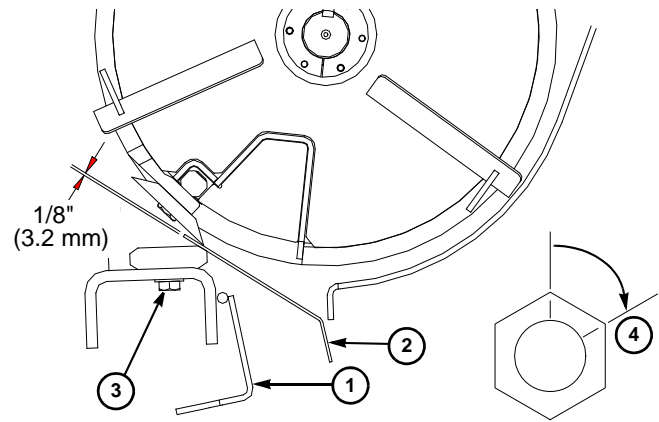


**WARNING:** Never start engine or operate machine with the cutter drum housing open. Material leaving the housing will be ejected at high speed, resulting in possible injury and blindness.



**NOTICE:** Whenever new or resharpened knives are installed, shear bar clearance must be verified, and adjusted if necessary.

- Step 1:** Remove four nuts and bolts that hold access door (1) closed. Access door will drop open.
- Step 2:** Remove four shear bar mounting bolts (3); shear bar will slide out.
- This is most easily done with an impact wrench.
  - Shear bar can be turned over and also reversed, giving four edges to use. Shear bar can also be reground for additional life.
- Step 3:** Clean shear bar mounting surface.
- Step 4:** Install shear bar and loosely install shear bar mounting bolts (3).
- Step 5:** Insert knife gauge (2) between shear bar and edge of the drum knife. Shear bar should fit snugly against the gauge; if it does not, slide shear bar snugly up to gauge.
- Step 6:** Using a hand wrench, snug the shear bar bolts.
- Step 7:** Finish tightening the bolts by turning them 1/6 of a turn (4) or to 210 ft-lb (285 Nm).
- Step 8:** Close access door and replace bolts.



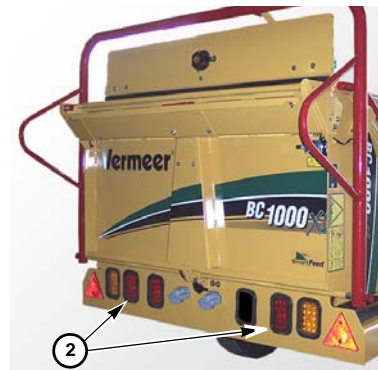
## HIGHWAY LIGHTS - REPLACE

Highway lights include two rear fixtures (1) on the BC1000XL, and five rear fixtures (2) on the BC1000XL European machine.

- Australian machine has four rear fixtures.
- Light fixtures (1) have non-serviceable LEDs. Replace complete assembly.

Remove entire light fixture by pushing it out of the grommet from back to front; unplug from connector.

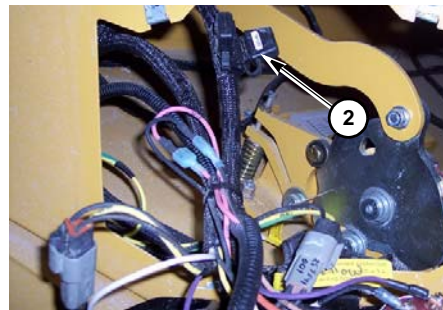
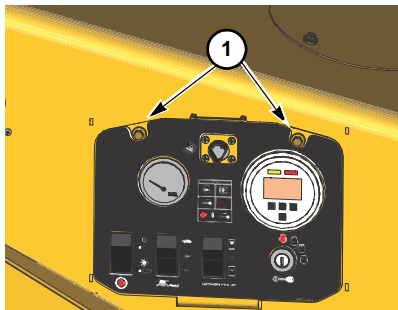
Install new fixture by plugging into connector and pushing it through grommet from outside.



## SMARTFEED SYSTEM FUSE - REPLACE

Access 10-amp fuse by removing the two bolts (1) at the top of the gauge panel.

Unplug fuse (2) and replace with the same type and size or electrical damage can result. If the fuse needs to be replaced, often an electrical problem may exist. Contact your Vermeer dealer.

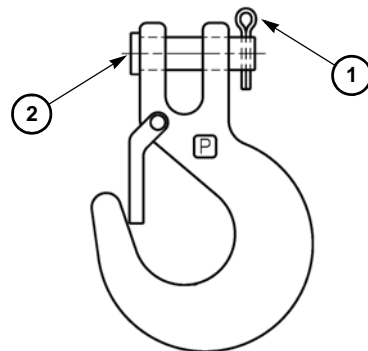


## SLIP HOOK - REPLACE

Replace towing chain slip hook if the latch is damaged, missing, or does not snap closed to the hook.

**Step 1:** Remove cotter pin (1) and slip hook pin (2) to remove slip hook from the chain link.

**Step 2:** Slide new slip hook onto chain link and install slip hook pin and cotter pin.



## TOWING CHAIN - REPLACE

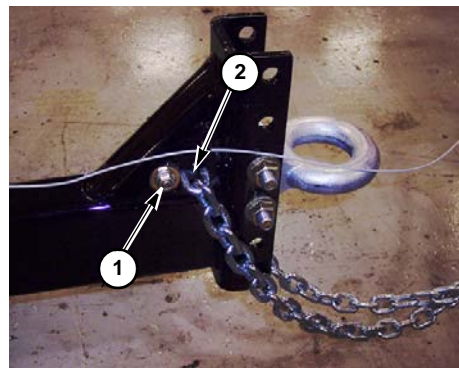
Replace towing chain if the chain has been dragged, kinked, or damaged.

**Step 1:** Remove bolt (1).

**Step 2:** Remove damaged chain from T-slot (2).

**Step 3:** Install new chain in T-slot and adjust length.

**Step 4:** Install bolt.



## REMOTE CONTROL BATTERY - REPLACE (OPTION)

Replace the remote control batteries when LED battery indicator (1) flashes red. The battery indicator LED will flash yellow when the battery level is down to 15%. When LED flashed red, the remote will shut down in less than 10 minutes. The battery indicator light flashes green when the batteries are in good condition.

- Remove screws from bottom of remote battery cover (2).
- Remove the old batteries and replace with four fresh, new batteries. Be sure to note the orientation of positive and negative terminals.
- Install screws and secure cover to remote.



# STORAGE

## Preparing for Storage

- Park machine on level ground and block wheels. Use jack to support the tongue. If possible, store machine in a dry, protected place. If stored outside, cover with weatherproof material.
- Clean all mud, dirt, grease, and other foreign material from the machine. To inhibit rusting, repaint areas where the paint has been worn.
- Repair or replace any worn or damaged parts and decals. Refer to the [Parts Manual](#) for ordering replacements.
- Refer to the Engine Operation Manual supplied with machine for engine storage instructions.
- Disengage cutter drive.
- Remove battery and store inside where the temperature will not drop below 32°F (0°C). Check fluid level and charge fully. Check battery every 30 days and charge if necessary.
- Lubricate all grease points on the machine.

## Removing from Storage

- Remove all protective coverings.
- Drain any water and sediment from fuel tank that may have built up during storage. Fill fuel tank.
- Check battery fluid level, charge battery, and install in machine.
- If so equipped, replace remote control batteries.
- Refer to the Engine Operation Manual supplied with machine for restoring engine to operation.
- Lubricate all grease points on the machine. “Maintenance - 10 Service Hours,” [page 25-1](#)

This page intentionally left blank.

# Section 70: Troubleshooting

POWER SYSTEM		
PROBLEM	CAUSE	SOLUTION
Engine hard to start or will not start	No fuel	Add fuel.
	Wrong fuel	Use correct fuel.
	Leak in fuel line	Check fuel line and connection.
	Dirt or water in fuel system	Remove fuel, clean tank, and replace fuel filter.
	Air in fuel system	Remove air from fuel system.
	Dirty fuel filter	Replace fuel filter.
	Wrong weight engine oil	Use correct oil.
	Restricted air filter	Clean or replace air filter.
	Dirty injectors	See your Vermeer dealer.

## POWER SYSTEM (CONTINUED)

PROBLEM	CAUSE	SOLUTION
<b>Lack of engine power</b>	Wrong fuel	Use correct fuel.
	Dirt or water in fuel system	Remove fuel, clean tank, and replace fuel filter.
	Air in fuel system	Remove air from fuel system.
	Dirty fuel filter	Replace fuel filter.
	Fuel strainer is dirty or clogged	Clean strainer.
	Wrong weight engine oil	Use correct oil.
	Restricted air filter	Clean or replace air filter.
	Low engine compression	See your Vermeer dealer.
	Engine too hot	See your Vermeer dealer.
	Dirty injectors	See your Vermeer dealer.
	Air leak between tank and pump	Repair leak.

## DRIVE SYSTEM

PROBLEM	CAUSE	SOLUTION
<b>Engine stalls when chipping</b>	Feed rate too high	SmartFeed System - See your Vermeer dealer.
<b>Discharging shredded material</b>	Knives are dull	Replace or sharpen knives.
<b>Fed material moves back toward operator</b>	Knives are dull	Replace or sharpen knives.
<b>Small material not being chipped</b>	Shear bar not adjusted properly	Adjust shear bar.
<b>Belts squeal when feeding materials</b>	Belts are loose or glazed	Adjust or replace belts.



<b>ELECTRICAL SYSTEM</b>		
<b>PROBLEM</b>	<b>CAUSE</b>	<b>SOLUTION</b>
<b>Low battery output</b>	Low water level	Add water.
	Corroded or loose battery cables	Clean and tighten battery cables.
	Defective battery cell	Replace battery.
	Cracked battery case or broken terminal	Replace battery.
	Dirty or wet battery top, causing discharge	Clean battery top.
<b>Battery using too much water</b>	Cracked battery case	Replace battery.
	Overcharged battery	See your Vermeer dealer.
<b>Low battery charge</b>	Alternator not charging	See your Vermeer dealer.
	Loose or corroded battery cables	Clean and tighten battery cables.
	Loose or glazed alternator belt	Tighten or replace belt.
	Defective battery cell	Replace battery.

<b>HYDRAULIC SYSTEM</b>		
<b>PROBLEM</b>	<b>CAUSE</b>	<b>SOLUTION</b>
<b>No hydraulic power</b>	No hydraulic fluid	Fill with fluid.
	Damaged or worn hydraulic pump	See your Vermeer dealer.
	Damaged relief valve	See your Vermeer dealer.
<b>Slow hydraulic power</b>	Low hydraulic fluid level	Add hydraulic fluid.
	Plugged hydraulic filter	Replace filter.
	Worn pump	See your Vermeer dealer.
	Improper pressure relief setting	See your Vermeer dealer.
	Cold hydraulic fluid	Let machine warm up and operate hydraulic system.
<b>Oil foams</b>	Low hydraulic fluid level	Add hydraulic fluid.
	Water in hydraulic fluid	Change fluid.
	Air leak between tank and pump	Repair leak.

<b>REMOTE CONTROL (OPTIONAL)</b>		
<b>PROBLEM</b>	<b>CAUSE</b>	<b>SOLUTION</b>
Feed rollers do not move when a remote function is activated.	Dead battery in remote control	Replace battery.
	Receiver and transmitter have not been initialized (must be done whenever Remote Enable Switch is pressed on the chipper)	Turn off remote control, switch the Remote Enable Switch to the remote control position, and turn the remote control back on.
	Loose connections at receiver	Contact Vermeer dealer.
	Antenna cable is not grounded	Contact Vermeer dealer.
Transmitting range reduces to less than 100 ft (30 m)	Weak battery	Replace battery in remote control.
	Antennas are shielded	Confirm there are no metal obstructions around chipper.
	Transmission blind spot caused by being too close to machine	Move away from machine.

This page intentionally left blank.

# Section 75: Specifications

## LUBRICANTS

Lubricant / Recommendation	Capacity	Specification / Notes
Deutz Engine Oil (with filter)	8.4 qt (8.0L)	<p>Use multigrade oils as specified in Engine Operation Manual supplied with each machine. Refer to the manual for recommended engine fluids.</p> <p>Use engine oil viscosities according to ambient temperature ranges:</p> <p>SAE 15W-40: 5°–104°F (-15°–40°C)</p> <p>SAE 10W-40: -4°–104°F (-20°–40°C)</p> <p>SAE 10W-30: -4°–86°F (-20°–30°C)</p> <p>SAE 5W-40: -22°–104°F (-30°–40°C)</p> <p>SAE 5W-30: -22°–86°F (-30°–30°C)</p> <p>SAE 0W-40: -40°–104°F (-35°–40°C)</p> <p>SAE 0W-30: -40°–86°F (-35°–30°C)</p>
		Engine must be level when checking engine oil.
Cummins Engine Oil (with filter)	8.5 qt (8 L)	<p>15W40, Cummins Premium Blue or equivalent, all seasons, 10 – 110°F (-12 – 43°C)</p> <p>Winter Conditions: 10W30, -15–68°F (-26–20°C)</p> <p>Arctic Conditions: 5W30, -30–68°F (-34-20°C)</p> <p>An Engine Operation Manual is supplied with each machine. Refer to the manual for engine service requirements.</p>

Lubricant / Recommendation	Capacity	Specification / Notes
<b>Cat Engine Oil (with filter)</b>	8.5 qt (8 L)	<p>Cat DEO (Diesel Engine Oil) 10W-30, 15W-40; API CH-4 and API CI-4 multigrade oils as specified in Engine Operation Manual supplied with each machine. Refer to the manual for recommended engine fluids.</p> <p>Use engine oil viscosities according to ambient temperature ranges:</p> <p>SAE 15W-40: 15°–122°F (-9.5°–50°C)            SAE 10W-40: 0°–122°F (-18°–50°C)            SAE 10W-30: 0°–104°F (-18°–40°C)            SAE 5W-40: -22°–122°F (-30°–50°C)            SAE 5W-30: -22°–86°F (-30°–30°C)            SAE 0W-40: -40°–104°F (-40°–40°C)            SAE 0W-30: -40°–86°F (-40°–30°C)            SAE 0W-20: -40°–50°F (-40°–10°C)</p>
<b>GM Engine Oil (with filter)</b>	4.5 qt (4.3 L).	<p>Use multigrade oils as specified in Engine Operation Manual supplied with each machine. Refer to the manual for recommended engine fluids.</p> <p>Use engine oil viscosities according to ambient temperature ranges:</p> <p>SAE 15W-40: 15°–122°F (-9.5°–50°C)            SAE 10W-40: 0°–122°F (-18°–50°C)            SAE 10W-30: 0°–104°F (-18°–40°C)            SAE 5W-40: -22°–122°F (-30°–50°C)            SAE 5W-30: -22°–86°F (-30°–30°C)            SAE 0W-40: -40°–104°F (-40°–40°C)            SAE 0W-30: -40°–86°F (-40°–30°C)            SAE 0W-20: -40°–50°F (-40°–10°C)</p>

Lubricant / Recommendation	Capacity	Specification / Notes
<b>Hydraulic Fluid</b> <i>Vermeer Ultra VMF Hydraulic Fluid</i>	7 gal (26.5 L)	Phillips: Type HG; ISO STD or equivalent
		If equipped with biodegradable hydraulic fluid, use Vermeer Biodegradable Hydraulic Fluid, Mobil EAL-224H, or equivalent.
		Use caution not to get dirt or other contaminants into the system(s) when connecting with a tractor, or when servicing. Filter all fluid through a 10-micron filter before adding.
		<b>NOTICE:</b> Use of any other hydraulic oil without written factory approval will jeopardize warranty.
<b>Grease</b> <i>Vermeer Ultra LC Grease</i>	As required	EP grease - Shell Alvania EP2 or equivalent
		To minimize condensation in bearings, grease machine after it is shut down for the day.
		Fittings and grease applicator nozzle must be clean before applying grease. Replace all missing fittings.
<b>General Lubricating Oil</b> <i>Vermeer Ultra Gold 10W30</i>	Coat lightly where required.	10W-30

## MACHINE SPECIFICATIONS

General	
Overall length (tongue in, infeed table up)	12.5 ft (3.8 m)
Overall length (tongue extended, infeed table down)	16.5 ft (5 m)
Overall width	66.5" (169 cm)
Overall height	101" (257 cm)
Total weight (estimated)	Caterpillar-4,680 lb (2125 kg) / 49 hp-Deutz-4,960 lb (2250 kg) / 74 hp-Deutz-5000 lb (2270 kg) Cummins-4,860 lb (2200 kg) / GM-4,800 lb (2180 kg)
Tongue weight (estimated)	485 lb (220 kg) Deutz 49 hp-620 lb (280 kg) / 74 hp-635 lb (290 kg)
Axle capacity	5,200 lb (2360 kg) or 7,000 lb (3175 kg) (Option)
Maximum log diameter	12" (30 cm)
Engine	
Model	<b>C2.2L Tier 4 Interim/stage IIIB</b>
No. cylinders/max torque	4 cyl., 103 ft-lb (140 Nm)
Fuel capacity and type	25 gal (95 L) Diesel
Cooling medium and capacity	Liquid, 9 qt (8.5 L)  Use a 50/50 mixture of Extended Life (ELC) Nitrite Free (NF) Coolant and distilled or deionized water. Never add pure antifreeze to the system; always dilute to a 50/50 mixture. Never use Supplemental Cooling Additives (SCA's) with ELC coolant. Refer to the Engine Operation Manual.
Maximum power	48.7 hp (36.3 kW) at 2800 rpm



<b>Engine</b>	<b>Deutz</b>	<b>Deutz</b>
Model	<b>D2.9 L4-Tier 4 Final/stage IIIB TD 2.9 L4-Tier 4 Final/stage IIIB (with turbo)</b>	
No. cylinders/max torque	4 cyl. - D2.9 108 ft-lb (146 Nm) 1600 rpm DT 2.9 w/turbo 192 ft-lb (260 Nm) @ 1800 rpm	
Maximum power	D2.9 L4-49 hp (37 kW) @ 2600 rpm TD 2.9 L4 / (with turbo) 74 hp (55 kW) @ 2600 rpm	
Cooling medium and capacity	Liquid, 11.5 qt (10.9 L) Liquid, 13 qt (12.3 L)  Use a 50/50 mixture of Extended Life (ELC) Nitrite Free (NF) Coolant and distilled or deionized water. Never add pure antifreeze to the system; always dilute to a 50/50 mixture. Never use Supplemental Cooling Additives (SCA's) with ELC coolant. Refer to the Engine Operation Manual.	
Fuel capacity and type	25 gal (95 L) Diesel EN 590 (Sulphur <10 mg/kg) ASTM D975 Grade 1 & 2-D S15	
<b>Engine</b>	<b>Cummins</b>	<b>Cummins</b>
Model	<b>B3.3 Turbo Tier 3</b>	<b>B3.3 Turbo Tier 4 Interim/stage IIIB</b>
No. cylinders/max torque	4 cyl., 274 ft-lb (371 Nm)	4 cyl., 181 ft-lb (245 Nm)
Fuel capacity and type	25 gal (95 L) Diesel	25 gal (95 L) Diesel
Cooling medium and capacity	Liquid, 14 qt (13 L) Liquid, 14 qt (13 L) Use a 50/50 mixture of Extended Life (ELC) Nitrite Free (NF) Coolant and distilled or deionized water. Never add pure antifreeze to the system; always dilute to a 50/50 mixture. Never use Supplemental Cooling Additives (SCA's) with ELC coolant. Refer to the Engine Operation Manual.	

Maximum power	85 hp (63 kW) at 2600 rpm      74 hp (55 kW Nitr) at 2600 rpm
<b>Engine</b>	<b>GM</b>
Model	<b>CPIB2.9GLP (3.0L)</b>
No. cylinders/max torque	4 cyl., 142 ft-lb @1600 rpm (193 Nm)
Fuel capacity and type	20 gal (76 L) Gasoline / Dual Fuel Optional Propane - Two 33 lb cylinders
Cooling medium and capacity	Liquid, 14.4 qt (13.6L)  Use a 50/50 mixture of Extended Life (ELC) Nitrite Free (NF) Coolant and distilled or deionized water. Never add pure antifreeze to the system; always dilute to a 50/50 mixture. Never use Supplemental Cooling Additives (SCA's) with ELC coolant. Refer to the Engine Operation Manual.
Maximum power	89 hp (66 kW) at 3000 rpm
<b>Battery - Cummins</b>	
Size	Group 31,12 volts
Cold cranking amps	660 CCA
<b>Battery - Caterpillar, GM</b>	
Size	Group 24,12 volts
Cold cranking amps	580 CCA

<b>Battery- Deutz</b>	
Size	Group 31, 12 volts
Cold cranking amps	950 CCA
<b>Hydraulic System</b>	
System pressure	2,500 psi (172 bar) maximum
Tank capacity	7 gal (26.5 L)
System flow	2.7 gpm (10 L/min)
<b>Tires -</b>	
Tire size	ST 235/80/R16 Load Range E
Tire pressure	80 psi (550 kPa)
Optional Caterpillar tire - size	ST 225/75/R15 Load Range D
Optional Caterpillar tire - pressure	65 psi (450 kPa)
Lug nut torque	95 ft-lb (129 Nm) - 5200 lb (Dexter) axle 135 ft-lb (183 Nm) - 7000 lb (Dexter) axle 285 Nm Euro (Knott) axle

This page intentionally left blank.

# Index

## A

- Additional Engine Maintenance, 60-1
- Additional Periodic Engine Maintenance, 60-2
- Air Cleaner - Inspect, 65-4
- Air Cleaner Elements - Replace (Caterpillar), 50-6
- Air Cleaner Elements - Replace (Deutz/Cummins/GM), 50-5
- Air Cleaner Restriction Indicator - Check (Cummins/Caterpillar), 25-13
- Air Cleaner Restriction Indicator-Check (Deutz/GM), 25-12
- Automatic Brake Controller with Manual Override (Option) - Check, 45-7

## B

- Ball Coupler - Lubricate and Inspect, 50-7
- Battery - Replace, 55-2
- Battery Electrolyte Levels and Terminals - Check, 50-11
- Battery Electrolyte Levels and Terminals - Check/Clean, 50-10
- Battery Terminals - Clean, 50-12
- Belt Drive Pivots - Grease, 30-5
- Belt Drive U-Joints - Grease, 30-6
- Bolt Inspection, 25-21
- Brake Controller - Adjust, 45-7
- Brake System - Check (BC1000XL European), 25-16
- Brake System - Check (Standard), 25-15
- Brakes - Adjust 5200 Lb/7000 Lb Dexter Axle, 45-8
- Brakes - Adjust (European Knott Axle), 45-9
- Brakes-(Dexter 5200 Lb Axle Nev-R-Adjust), 45-8

## C

- Cooling System - Drain and Clean, 55-4
- Cutter Belt Wear - Check, 45-5
- Cutter Drum Bearings, 20-1
- Cutter Drum Drive Belt - Replace, 50-14
- Cutter Drum Drive Belt Tension - Adjust, 30-4
- Cutter Drum Drive Belt Tension - Check/Adjust, 30-3
- Cutter Drum Drive Belt Tension - Initial Check, 25-17

## D

- Drive Sheave Bearing, 20-2
- Drive System, 70-2
- Drum Inspection, 25-23

## E

- Electric Brakes - Test, 25-16
- Electrical System, 70-3
- Engine Area - Clean, 65-1
- Engine Cooling System (Caterpillar/GM) - Check, 25-5
- Engine Cooling System (Cummins) - Check, 25-6
- Engine Cooling System (Deutz) - Check, 25-4
- Engine Maintenance - (Caterpillar), 35-1
- Engine Maintenance - (Caterpillar), 50-1
- Engine Maintenance - (Cummins), 50-2
- Engine Maintenance - (Deutz), 50-1
- Engine Maintenance - (GM), 50-2
- Engine Maintenance - 2000 Service Hours, 60-1
- Engine Maintenance - 3000 Service Hours, 60-1

Engine Maintenance And System Check, 55-1

Engine Maintenance, 25-1

Engine Maintenance, 30-1

Engine Maintenance, 45-1

Engine Maintenance, 65-1

Engine Oil and Filter - Change/Replace (Caterpillar), 35-1

Engine Oil and Filter - Change/Replace (Cummins), 45-1

Engine Oil and Filter - Change/Replace (Deutz), 50-3

Engine Oil and Filter - Change/Replace (GM), 40-1

Engine Oil and Filter - Initial Change/Replace (Deutz), 30-2

Engine Systems - Check, 65-1

Engine Systems - Check/Inspect, 25-1

## **F**

Feed Roller Arm Pivots - Grease, 30-7

Feed Roller Controls - Check, 25-27

Feed Table Curtains - Replace, 50-13

Fuel Filter - Replace (GM) , 45-3

Fuel Filters - Replace (Caterpillar), 50-4

Fuel Filters - Replace (Cummins), 45-4

Fuel Filters - Replace (Deutz), 45-2

Fuel Pre-Filter - Drain (Deutz), 25-10

Fuel Tank Fill - (Caterpillar/Cummins/Deutz), 25-8

Fuel Tank Fill - (GM), 25-9

Fuel/Water Separator - Drain (Cummins), 25-11

## **G**

General Propane Safety Information, 65-5

## **H**

Highway Lights - Replace, 65-12

Hydraulic Fluid - Change, 50-8

Hydraulic Fluid Filter - Initial Replacement, 30-1

Hydraulic Fluid Filter - Replace, 45-6

Hydraulic Fluid Level - Check, 25-7

Hydraulic Fluid Strainer - Inspect , 50-9

Hydraulic Surge Brake (Standard BC1000XL Option) Fluid Level -  
Check, 25-14

Hydraulic Surge Brakes (Standard BC1000XL Option) - Check  
Function, 25-14

Hydraulic System - Check, 35-3

Hydraulic System, 70-4

Hydraulic Tank - Keep Clean, 35-3

## **I**

## **J**

Jack - Lubricate, 45-5

## **K**

Knife Inspection, 25-20

Knife Installation, 25-25

Knife Mount Surface Inspection, 25-22

Knife Removal, 25-18

Knife Sharpening, 25-24

Knife/Drum Maintenance, 25-18

Knife-Mounting Surface - Inspect, 65-8

## **L**

- Lower Feed Stop Bar and Side Feed Stop Bars, 25-28
- Lower Feed Stop Bar Switch - Check/Adjust (BC1000XL European Only), 35-9
- Lower Feed Stop Bar Switch - Check/Adjust (BC1000XL Only), 35-6
- Lubricants, 75-1

## **M**

- Machine - Grease, 25-1
- Machine Components - Inspect, 30-1
- Machine Components - Inspect, 35-2
- Machine Specifications , 75-4
- Maintenance - 10 Service Hours, 25-1
- Maintenance - 100 Service Hours, 35-1
- Maintenance - 1000 Service Hours, 55-1
- Maintenance - 12000 Service Hours, 60-2
- Maintenance - 200 Service Hours, 40-1
- Maintenance - 250 Service Hours, 45-1
- Maintenance - 5 Service Hours, 20-1
- Maintenance - 50 Service Hours, 30-1
- Maintenance - 500 Service Hours, 50-1
- Maintenance - 6000 Service Hours, 60-2
- Maintenance - As Required, 65-1

## **N**

## **O**

- Oil Level Check - (Cummins/GM), 25-3
- Oil Level Check- (Deutz/Caterpillar), 25-2

## **P**

- Park Brake - Adjust (European Knott Axle), 45-10
- Park Brake Lever - Grease (European Only), 55-2
- Pintle Hitch - Check, 25-17
- Power System, 70-1
- Preparing for Storage, 65-15
- Propane Cylinder - Remove and Install (GM Dual Fuel Option), 65-5
- Propane Fuel Filter - Replace (GM Dual Fuel Option), 65-7

## **Q**

- Quick Stop Procedure, 15-2

## **R**

- Remote Control Battery - Replace, 65-14
- Remote Control Beacon - Check (Option), 25-29
- Remote Control Engine Stop - Check (Option), 35-4
- Remote Control (Optional), 70-5
- Removing from Storage, 65-15
- Reset Remote Control Engine Stop (Option), 15-2

## **S**

- Safety Messages, 10-1
- Safety Signs - Maintain, 35-2
- Safety Symbol Explanation, 10-1
- Service, 1-3
- Shear Bar - Check/Adjust, 65-8
- Shear Bar - Replace, 65-10
- Shear Bar Mounting Hardware - Check, 30-2
- Shutdown Procedure, 15-1
- Side Feed Stop Bars

(BC1000XL European Only), 35-11  
Slip Hook - Replace, 65-13  
SmartFeed System Fuse - Replace, 65-12  
Specifications, 75-1  
Stopping the Machine, 15-1  
Storage, 65-15  
Surge Brake Actuator - Grease  
(European Only), 55-1

## **T**

Tires and Rims - Check, 35-4  
Towing Chain - Replace, 65-13  
Troubleshooting, 70-1

## **U**

Upper Feed Control Bar Force - Check/Adjust, 35-5  
Upper Feed Control Bar, 25-27

## **V**

## **W**

Wheel Bearings - Grease (Dexter 5200 lb/7000 lb Axle  
EZ-Lube), 45-11  
Wheel Bearings - Grease/Repack (Dexter 5200 lb/7000 lb  
Axle EZ-Lube), 65-2  
Wheel Lug Nut Torque - Initial Check, 25-17



# Revision History

Revision	Date	Page(s)	Description
m3_03	07/06	TOC; 10 Hr, 25-5-18, 45-3-8, Index.	Addition of pintle hitch information.
m3_04	02/07	TOC; 25-1,2,4-8, 30-1,3-5 35-1,4-6, all, 45-3,4,9,10, 50-1-2 all 60-1; Index.	Updated maintenance intervals
m3_05	07/07	10 Hr, 25-17.	Feed roller operation/Safety updates.
m4_00	03/08	All	Tier 3 engine update, removal of EU machine information.
m4_01	10/08	Intro; TOC; 25-7-10,19-21,30-2, 35-5, 8,9, 45-2, 50-1,2 60-3,5; Index.	Added EU machine info for Tier 3 engine. Updated shear bar maintenance instructions.
m5_00	08/09	All	5th edition manual released. Tier 4 engine, 49 hp.
m6_00	10/09	All	6th edition manual released, added Cummins Tier 3 engine option.
m6_01	04/10	Section 30, 50 Hr; Section 35, 100 Hr.	Correction to drawing, addition of axle info.
m6_02	10/11	10 Hrs, 100 Hrs, Specifications	Added Tier 4 interim/stage IIIB 74 hp engine information
m6_03	12/12	Section 30, 50 Hours, page 3	Added missing balloons to graphics
m6_04	04/13	All	Added Deutz, GM engines and revisions
m6_05	06/13	50-9, 50-10	Check/pack wheel bearings every 500 hours or yearly.
m6_06	10/13	65-2, 65-3, 65-4, 75-5, 45-8, 50-10	GM dual fuel option added, Specifications, 5200 lb Nev-R-Adjust brakes & E-Z lube axle.
m6_07	12/14	45-11, 65-2, 65-3, 65-9	Updated Axle Grease Interval, added Shear Bar Gauge.
m6_08	02/15	Sections: 11, 25, 35, 65, 70	Optional Remote Control added.
m6_09	05/15	25-4, 25-5, 25-6, 50-1, 50-2, 55-4, 75-4, 75-5, 75-6	Updated the coolant to Extended Life (ELC) Nitrite Free (NF) coolant. Removed references to SCA or coolant extender.



## **WARNING**

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.

## **CALIFORNIA**

### **Proposition 65 Warning**

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

When operated in California, any off-road diesel vehicle may be subject to the California Air Resources Board In-Use Off-Road Diesel Vehicle Regulation. It therefore could be subject to retrofit or accelerated turnover requirements to reduce emissions of air pollutants. For more information, please visit the California Air Resources Board website at <http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm>.