6 INCH CHIPPER
OWNER'S MANUAL

CH6627HXF
627cc Briggs & Stratton®

P/N: 78621-00
Revision: 20230307
Serial Range: 5VJAA0411NW007009 - Current

Companion to P/N: 78666-00

CRARY®
BEAR CAT®
UNLEASH THE POWER.™

WARNING: Cancer and Reproductive Harm
www.P65Warnings.ca.gov

Before You Begin

DEAR Crary Bear Cat® CUSTOMER

Thank you for purchasing an Crary Bear Cat product. The Crary Bear Cat line is designed, tested, and manufactured to give years of dependable performance. To keep your machine operating at peak efficiency, it is necessary to adjust it correctly and make regular inspections. The following pages will assist you in the operation and maintenance of your machine. Please read and understand this manual before operating your machine.

If you have any questions or comments about this manual, please call us toll-free at 888-625-4520.

If you have any questions or problems with your machine, please call or write your local authorized Crary Bear Cat dealer.

This document is based on information available at the time of its publication. Crary Bear Cat is continually making improvements and developing new equipment. In doing so, we reserve the right to make changes or add improvements to our product without obligation for equipment previously sold.

IMPORTANT WARRANTY REGISTRATION

IF YOU HAVE NOT REGISTERED YOUR CRARY BEAR CAT PRODUCT, PLEASE DO SO TODAY. TO REGISTER YOUR CRARY BEAR CAT PRODUCT ON-LINE AT HTTPS://WWW.BEARCATPRODUCTS.COM/SUPPORT/PRODUCT-REGISTRATION/ OR CALL OUR CUSTOMER SERVICE LINE AT (888) 625-4520 FOR ASSISTANCE IN REGISTRATION.

CARB Preemption Statement

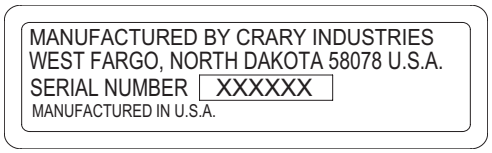
Your Crary Industries (Crary) gasoline or diesel fueled engine powered equipment (Equipment) is certified and compliant to applicable U.S. Environmental Protection Agency (EPA) standards. Your Crary Equipment matches an Equipment Type "preempted" from California Air Resources Board (CARB) jurisdiction. Farm and Construction equipment such as your Crary Equipment is beyond CARB's authority to regulate and therefore subject only to EPA standards in the US, including in California. Please reference the CARB List to Determine Preempt Off-Road Applications on http://www.arb.ca.gov/msprog/offroad/preempt.htm for more information. As the owner, you must still follow all engine and Equipment operating, maintenance and repair instructions. Other local use or national standards and registration requirements, such as the CARB Portable Equipment Registration Program may apply.

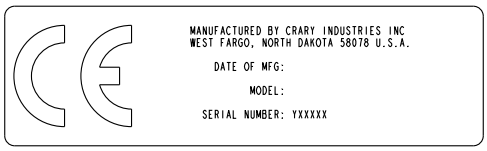
IDENTIFICATION NUMBER LOCATION

Your machine will have either a serial number. Serial numbers are located on the machine body. They are 6-digit numbers. For the exact location of the serial number, see the parts manual available at bearcatproducts.com/Product-Support/Find-A-Product-Manual.

Record your identification number in the space provided and on the warranty registration card.

SERIAL NUMBER



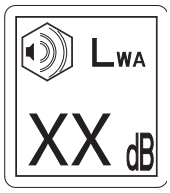


HOW TO CONTACT Crary Bear Cat			
ADDRESS	**PHONE**	**E-MAIL**	**HOURS**
237 NW 12th Street P.O. Box 849 West Fargo, ND 58078	888-625-4520 701-282-5520 Fax: 701-282-9522	sales@bearcatproducts.com service@bearcatproducts.com	Monday - Friday 8 a.m. to 5 p.m. Central Time

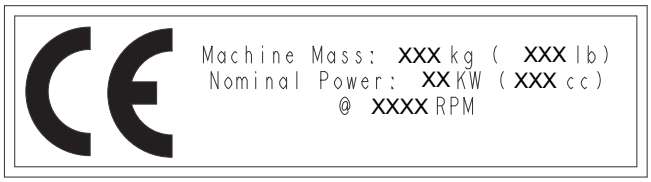
Is my machine CE Compliant?

The CE marking (also known as the “CE mark”) is a mandatory compliance mark on products sold internationally where CE standards are enforced and in the European Economic Area (EEA). The CE marking certifies that a product has met European Union (EU) consumer safety, health or environmental requirements. By affixing the CE marking to our products, Crary® Bear Cat® declares that it meets EU safety, health and environmental requirements.

Other CE Model Identifying Decals



Crary® Bear Cat® products that are CE compliant will be labeled with a decibel level warning decal. This decal notes the decibel level of noise created while the machine is operating under normal conditions.



CE compliant Crary® Bear Cat® products will also have a CE compliance information decal detailing weight and power specifications for the specific model on which it is found.

CE Compliant Decal Location

Crary® Bear Cat® products that are CE compliant will be clearly marked with the decals similar to the ones shown above. These products feature safety and other engineering features that non-CE compliant products do not have. Non-CE compliant Crary® Bear Cat® products are primarily sold in countries and regions that do not require or enforce mandatory CE certification. However, this is not true for all countries and regions. If you are unsure of CE requirements for the country or region in which you live, please contact your nearest Crary® Bear Cat® dealer or distributor.

LIMITED WARRANTY

This warranty applies to all Crary® Bear Cat® Outdoor Power Equipment manufactured by Crary Industries, Inc. and does not include gas engine or electric powered pressure washers under the Crary Bear Cat brand. See Crary Bear Cat Pressure Washer Limited Warranty for complete warranty details on those products.

Crary Industries, Inc. warrants to the original owner each new Crary Bear Cat product to be free from defects in material and workmanship, under normal use and service. The warranty shall extend, from date of purchase, three years (U.S. and Canada only [two years outside U.S. and Canada]) for Consumer use of the product, one year for Commercial applications and six months for Rental applications. Replacement parts and accessories are warranted for 90 days from date of installation. Batteries for Inverters and Generators are warranted for 90 days from the date of purchase.

“Consumer” defined as:Complete unit for personal, residential, or non-income producing use.

“Commercial” defined as:Complete unit for commercial, institutional, property management, agricultural,horticultural or income producing use.

“Rental” defined as:Complete unit for rental purposes to produce income.

The product is warranted to the original owner by either a completed warranty registration on file at Crary Industries, Inc. and/or proof of sale. Warranty coverage begins on the date of purchase. The warranty registration can be registered on-line by visiting bearcatproducts.com/Product-Support/Product-Registration.

In the event of a failure, return the product, at your cost, along with proof of purchase to the selling Crary Bear Cat dealer. Crary Industries, Inc. will, at its option, repair or replace any parts found to be defective in material or workmanship. Warranty on any repairs will not extend beyond the product warranty. Repair or attempted repair by anyone other than an authorized Crary Bear Cat dealer as well as subsequent failure or damage that may occur as a result of that work will not be paid under this warranty. Crary Industries, Inc. does not warrant replacement components not manufactured or sold by Crary Industries, Inc.

1. This warranty applies only to parts or components that are defective in material or workmanship.
2. This warranty does not cover normal wear items including, but not limited to: batteries, bearings, belts, pulleys, filters, chipper blades, shredder knives.
3. This warranty does not cover normal maintenance, service, or adjustments.
4. This warranty does not cover depreciation or damage due to misuse, negligence, accident, or improper maintenance.
5. This warranty does not cover damage due to improper setup, installation, or adjustment.
6. This warranty does not cover damage due to unauthorized modifications of the product.
7. Engines are warranted by the respective engine manufacturer and are not covered by this warranty.

Crary Industries, Inc. is not liable for any property damage, personal injury or death resulting from the unauthorized modification or alteration of an Crary Bear Cat product or from the owner’s failure to assemble, install, maintain, or operate the product in accordance with the provisions of the Owner’s manual.

Crary Industries, Inc. is not liable for indirect, incidental, or consequential damages or injuries including but not limited to loss of crops, loss of profits, rental of substitute equipment or other commercial loss. This warranty gives you specific legal rights. You may have other rights that may vary from area to area.

Crary Industries, Inc. makes no warranties, representations or promises, expressed, or implied as to the performance of its products other than those set forth in this warranty. Neither the dealer nor any other person has any authority to make any representations, warranties or promises on behalf of Crary Industries, Inc. or to modify the terms or limitations of this warranty in any way. Crary Industries, Inc., at its discretion, may periodically offer limited, written enhancements to this warranty.

CRARY INDUSTRIES, INC. RESERVES THE RIGHT TO CHANGE THE DESIGN AND/OR SPECIFICATIONS OF ITS PRODUCTS AT ANY TIME WITHOUT OBLIGATION TO PREVIOUS PURCHASERS OF ITS PRODUCTS.

TABLE OF CONTENTS

1 SAFETY
Section

1.1 SAFETY ALERT SYMBOL

The Owner/Operator's manual uses this symbol to alert you of potential hazards. Whenever you see this symbol, read and obey the safety message that follows it. Failure to obey the safety message could result in personal injury, death or property damage.

DANGER

Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury.

WARNING

Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury.

1.2 FIRE HAZARD INFORMATION

Federal, state, and local laws may prohibit the operation of an internal combustion engine using hydrocarbon fuels on any forest covered, brush covered or grass covered land or on land covered with grain, hay or other flammable agricultural crops, without an engine spark arrestor in continuous effective working order.

The engine on your power equipment, like most outdoor power equipment, is an internal combustion engine that burns gasoline or diesel fuel (hydrocarbons). If operating your power equipment in affected areas, it must be equipped with a spark arrestor in continuous effective working order. The spark arrestor must be attached to the engine exhaust system in such a manner that flames or heat from the system will not ignite flammable material.

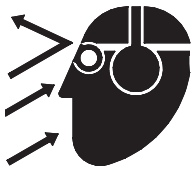
Failure of the owner/operator of the equipment to comply with federal, state, and local laws may subject him or her to fines and/or other penalties. Contact your local fire marshal or forest service for specific information about which regulations apply in your area.

The standard muffler installed on the engine is spark arrestor capable. Spark arrestors require regular maintenance. See the Service & Maintenance section of this manual for more information.

Contact local fire authorities for laws or regulations regarding fire prevention requirements.

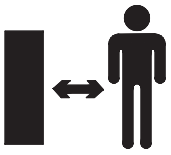
1.3 BEFORE OPERATING

1. Read and understand this owner's manual. Be completely familiar with the controls and the proper use of this equipment.
2. Familiarize yourself with all of the safety and operating decals on this equipment and on any of its attachments or accessories.
3. Keep safety decals clean and legible. Replace missing or illegible safety decals.
4. Obtain and wear safety glasses and use hearing protection at all times when operating this machine.



5. Avoid wearing loose fitted clothing. Never operate this machine while wearing clothing with drawstrings that could wrap around or get caught in the machine.
6. Do not operate this machine if you are under the influence of alcohol, medications, or substances that can affect your vision, balance or judgement. Do not operate if tired or ill. You must be in good health to operate this machine safely.

7. Do not operate this equipment in the vicinity of bystanders. Keep the area of operation clear of all persons, particularly small children. It is recommended that bystanders keep at least 50 feet (15 meters) away from the area of operation.



8. Do not allow children to operate this equipment.
9. Use only in daylight or good artificial light.
10. Do not run this equipment in an enclosed area. Engine exhaust contains carbon monoxide gas, a deadly poison that is odorless, colorless and tasteless. Do not operate this equipment in or near buildings, windows or air conditioners.
11. Always use an approved fuel container. Do not remove gas cap or add fuel when engine is running. Add fuel to a cool engine only.
12. Do not fill fuel tank indoors. Keep open flames, sparks, smoking materials and other sources of combustion away from fuel.
13. Do not operate machine without shields in place. Failure to do so may cause serious injury or death.
14. Keep all guards, deflectors, and shields in good working condition.
15. Before inspecting or servicing any part of this machine, shut off the machine and make sure all moving parts have come to a complete stop. Disconnect the battery and remove the ignition key where applicable.
16. Check that all screws, nuts, bolts, and other fasteners are secured, tightened and in proper working condition before starting the machine.
17. Do not transport or move machine while it is operating or running.

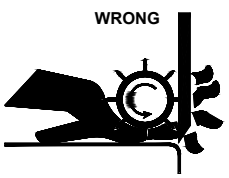
1.4 OPERATION SAFETY

1. Always stand clear of discharge area when operating this machine. Keep face and body away from feed and discharge openings.
2. Keep hands and feet out of feed and discharge openings while machine is operating to avoid serious personal injury. Stop and allow machine to come to a complete stop before clearing obstructions.

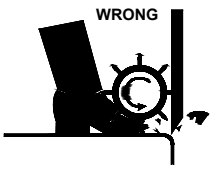
3. Set up your work site so you are not endangering traffic and the public. Take great care to provide adequate warnings.
4. Do not climb on machine when operating. Keep proper balance and footing at all times.
5. Check cutting chamber to verify it is empty before starting the machine.
6. The rotor will continue to rotate after being disengaged. Shut off the machine and make sure all moving parts have come to a complete stop before inspecting or servicing any part of the machine. Disconnect the battery and remove the ignition key if applicable.
7. Do not insert branches with a diameter larger than the max chipper capacity into machine or machine damage may occur.
8. When feeding material into machine, do not allow metal, rocks, bottles, cans or any other foreign material to be fed into the machine.
9. Ensure debris does not blow into traffic, parked cars, or pedestrians.
10. Keep the machine clear of debris and other accumulations.
11. Do not allow processed material to build up in the discharge area. This may prevent proper discharge and can result in kickback of material through the feed opening.
12. If the machine becomes clogged, the cutting mechanism strikes any foreign object, or the machine starts vibrating or making an unusual noise, shut off machine immediately and make sure all moving parts have come to a complete stop. Disconnect the battery and remove the ignition key if applicable. After the machine stops: A) Inspect for damage, B) Replace or repair any damaged parts, and C) Check for and tighten any loose parts.
13. On electric start models, disconnect cables from battery before doing any inspection or service. Remove key.
14. Check blade bolts for proper torque after every 8 hours of operation. Check blades and rotate or resharpen daily or as required to keep blades sharp. Failure to do so may cause poor performance, damage or personal injury and will void the machine warranty.

1.5 FEED ROLLER SAFETY

1. The feed roller can cause serious injury or death. Keep hands, feet and clothing away from the feed roller and chipper rotor blades.



2. Never climb onto the feed chute when the unit is operating or running.
3. Do not overreach. Keep proper balance and footing at all times.



4. Never allow anyone to sit on the feed chute.
5. When feeding material into the feed roller wear eye, face and hearing protection.

6. Stand to side of feed chute when feeding material and release material quickly.
7. When inspecting or servicing the feed roller, secure the feed roller in the raised position using the lock pin, if applicable.

1.6 BATTERY SAFETY

Improper use and care of the battery on electric start models can result in serious personal injury or property damage. Always observe the following safety precautions.

- **Poison/Danger – Causes Severe Burns.** The battery contains sulfuric acid. Avoid contact with skin, eyes or clothing. Keep out of reach of children.
- **ANTIDOTE – External Contact:** Flush immediately with water.
- **ANTIDOTE – Internal:** Drink a large amount of water or milk. Follow with milk of magnesia, beaten egg or vegetable oil. Call a physician immediately.
- **ANTIDOTE – Eye Contact:** Flush with water for 15 minutes. Get prompt medical attention.

1. The battery produces explosive gases. Keep sparks, flame or cigarettes away. Ventilate area when charging battery. Always wear safety goggles when working near battery.
2. The battery contains toxic materials. Do not damage battery case. If case is broken or damaged, avoid contact with battery contents.
3. Neutralize acid spills with a baking soda and water solution. Properly dispose of a damaged or worn-out battery. Check with local authorities for proper disposal methods.
4. Do not short circuit battery. Severe fumes and fire can result.
5. Before working with electrical wires or components, disconnect battery ground (negative) cable first. Disconnect positive cable second. Reverse this order when reconnecting battery cables.

1.7 MAINTENANCE/STORAGE SAFETY

1. Before inspecting, servicing, storing, or changing an accessory, shut off the machine and make sure all moving parts have come to a complete stop. Disconnect the battery and remove the ignition key where applicable.
2. Replace any missing or unreadable safety decals. Refer to the safety decal section for part numbers.
3. Allow machine to cool before storing in an enclosure.
4. Store the machine out of reach of children and where fuel vapors will not reach an open flame or spark.
5. Never store this machine with fuel in the fuel tank inside a building where fumes may be ignited by an open flame or spark. Ignition sources can be hot water and space heaters, furnaces, clothes dryers, stoves, electric motors, etc.
6. Drain the fuel and dispose of it in a safe manner for storage periods of three months or more.

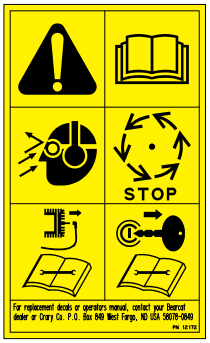
1.8 SAFETY DECALS

See Section 1.9 for decal locations. Familiarize yourself with all of the safety and operating decals on the machine and the associated hazards. See the engine owner's manual or contact the engine manufacturer for engine safety instructions and decals.

1 PN 12169

Keep hands and feet out of inlet and discharge openings while machine is operating to avoid serious personal injury. Stop and allow machine to come to a complete stop before clearing obstructions.

2 PN 12172



Read and understand this owner/operators manual. Be completely familiar with the controls and the proper use of this equipment

Obtain and wear safety glasses and use hearing protection at all times when operating this machine.

Before inspecting or servicing any part of this machine, shut off power source, remove the key, disconnect spark plug wire from spark plug and make sure all moving parts have come to a complete stop.

3 PN 12173

Do not operate this equipment in the vicinity of bystanders. Do not allow children to operate this equipment. Always stand clear of discharge area when operating this machine. Keep face and body away from discharge areas.

4 PN 12174

Do not operate machine without shields in place. Failure to do so may cause serious injury or death.

5 PN 12175

Keep hands and feet out of inlet and discharge openings while machine is operating to avoid serious personal injury. Stop and allow machine to come to a complete stop before clearing obstructions.

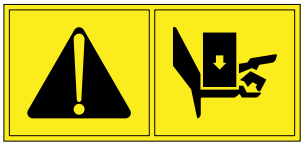
6 PN 12250

Check blade bolts for proper torque after every 8 hours of operation. Check blades and rotate or resharpen daily or as required to keep blades sharp. Refer to owners manual for instructions. Failure to do so may cause poor performance, damage or personal injury and will void the machine warranty.

7 PN 14942-00

Read and understand you owners manual before operating. If owners manual was not included or you have any questions, please call 800.247.7335 or 701.282.5520 (U.S.A.).

8 PN 18983-00



Feed roller support must be secured in the up position prior to servicing chipper feed area. The feed roller can fall and cause severe bodily harm. Consult owners manual for proper method of securing feed roller support. Lower feed roller before operating chipper.

9 PN 32109-00

Do not operate this equipment in the vicinity of bystanders. Do not allow children to operate this equipment. Always stand clear of discharge area when operating this machine. Keep face and body away from discharge areas. Rotate the discharge tube over the hitch before towing and lock securely in place.

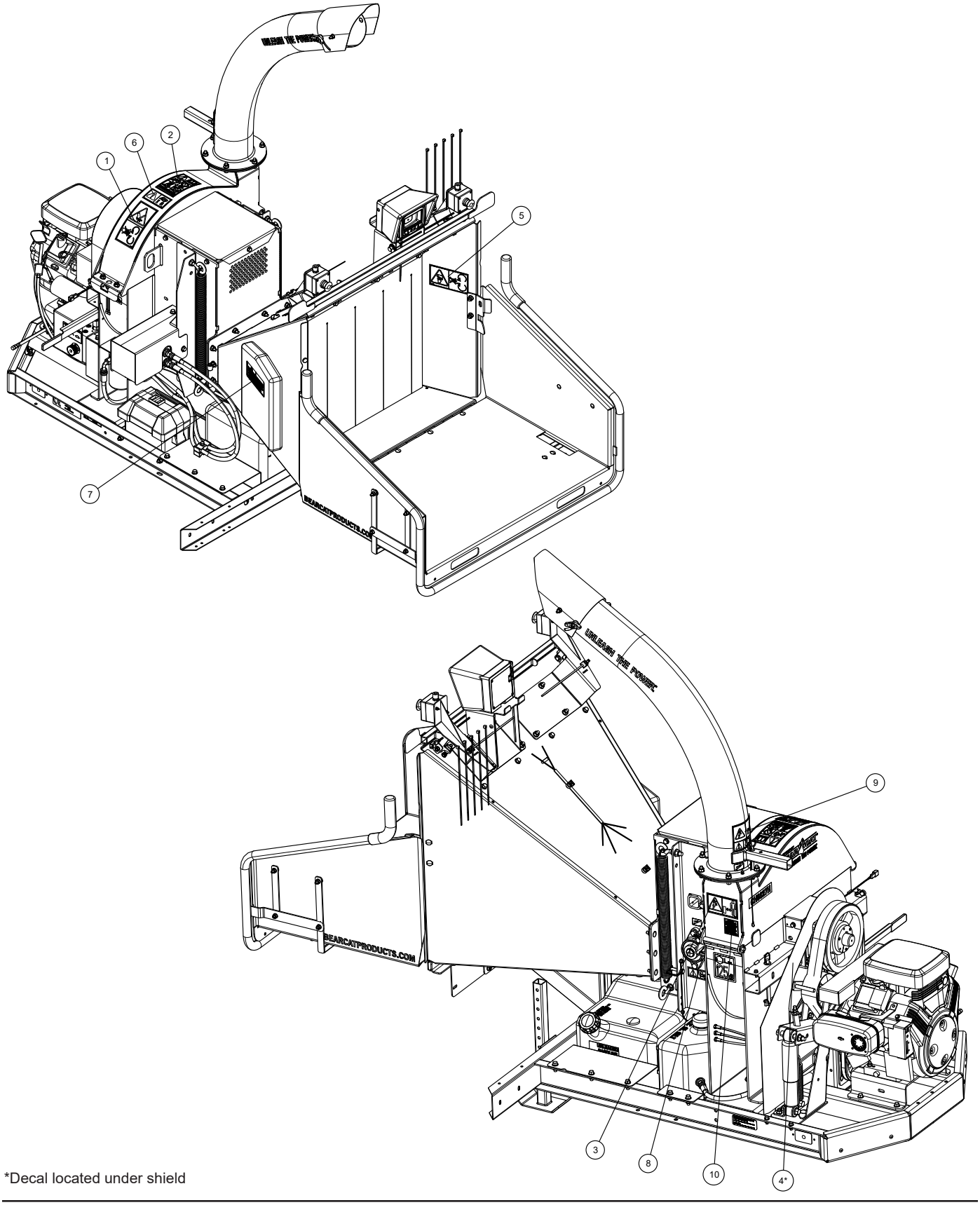
10 PN 33883-00

Operation of this equipment may create sparks that can start fires around dry vegetation. A spark arrestor may be required. The operator should contact local fire agencies for laws or regulations relating to fire prevention requirements.

ENGLISH

1.9 SAFETY DECAL LOCATIONS

The numbers below correspond to the decals in Section 1.8. Make certain that all safety and operating decals on this machine are kept clean and in good condition. Decals that need replacement must be applied to their original locations.



*Decal located under shield

2 ASSEMBLY

Section

2.1 INSTALL REAR STABILIZER

To install the rear stabilizer, slide the stabilizer into the corresponding bracket beneath the rear of the chipper frame. Adjust the stabilizer and secure with the provided snap pin.

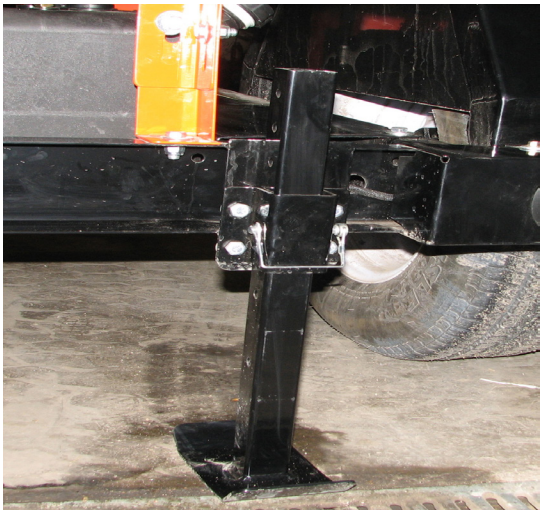


Figure 2.2, Rear Stabilizer

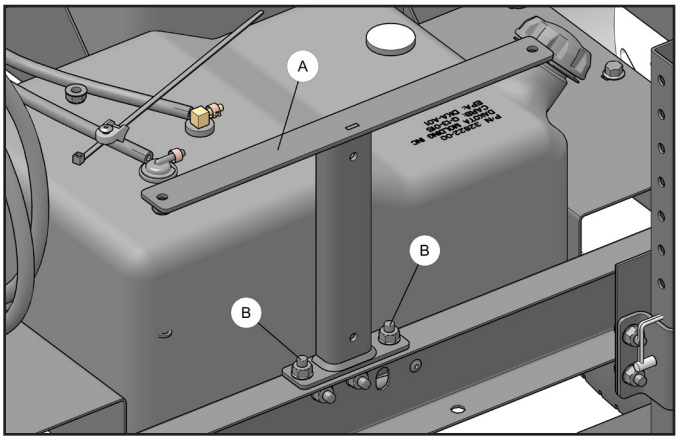
2.2 ATTACH CHUTE AND SUPPORT

IMPORTANT

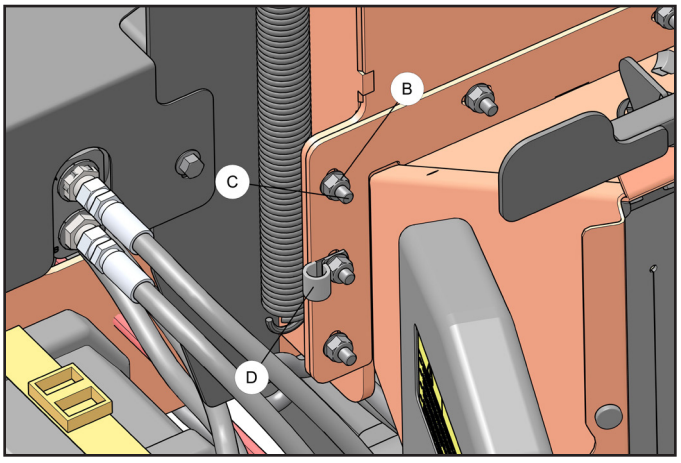
USE OF A CERTIFIED HOIST OR OTHER LIFTING DEVICE WILL BE NEEDED TO PROPERLY ALIGN AND ATTACH CHIPPER CHUTE TO MACHINE.

NOTE

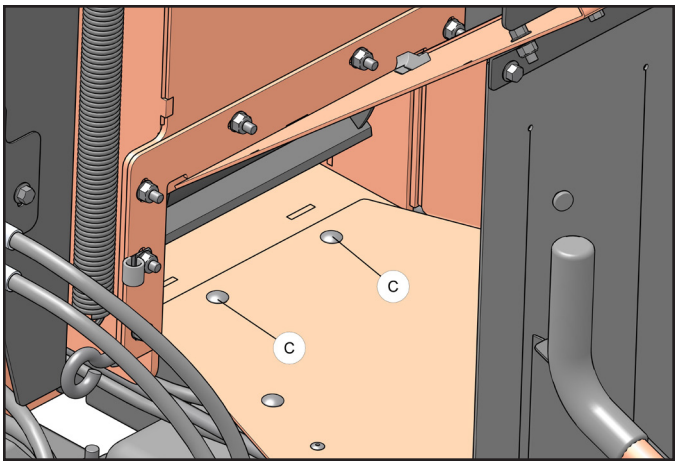
In tropical regions, areas of high humidity or rainfall amounts, dielectric grease may be added to wire harness connectors to provide corrosion resistance.



1. Attach the vertical infeed support (A) to the trailer frame with two 3/8 x 1" carriage bolts and 3/8" nylock nuts (B).

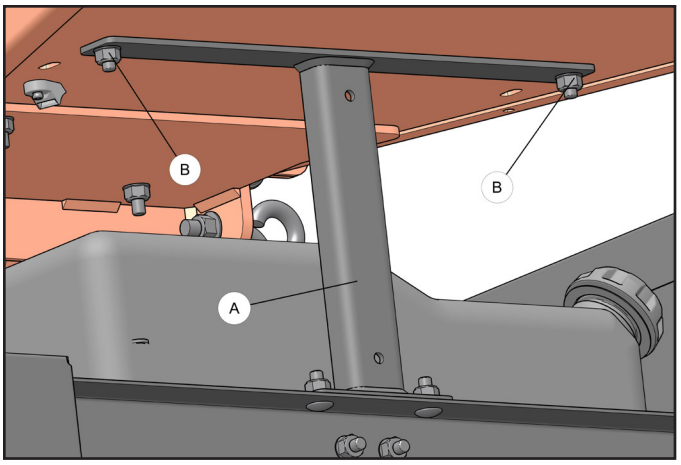


2. Loosely attach the infeed chute to the feed roller houseing with ten 3/8 x 1-1/4" carriage bolts (C) and 3/8" nylock nuts (B).
   - Install clamp (D) at location shown.

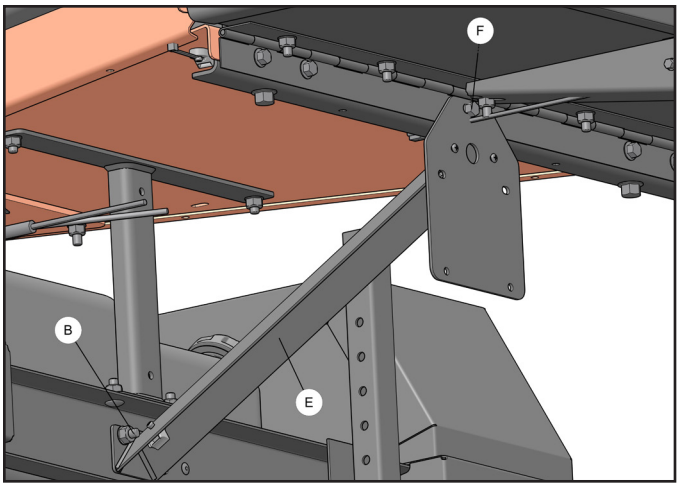


Picture Note: Panel removed for better view.

- Insert the two bolts (C) on the bottom from inside the feed chute.

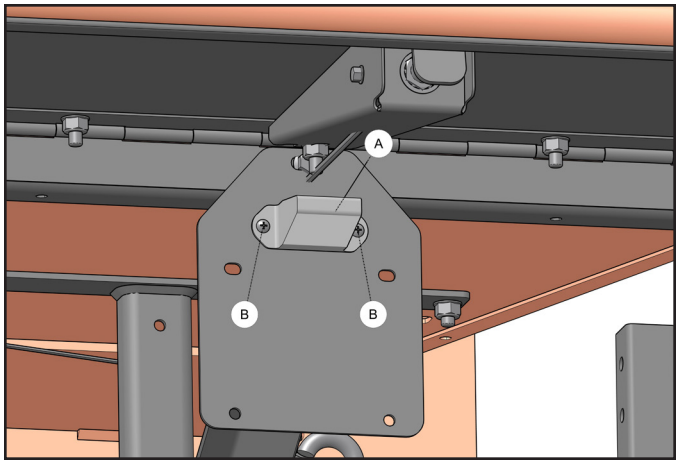


1. Attach the vertical infeed support (A) to the infeed chute with two 3/8 x 1" carriage bolts and 3/8" nylock nuts (B).



2. Attach the chute support (E) to the trailer frame with two 3/8 x 1" carriage bolts and 3/8" nylock nuts (B).
3. Attach the chute support to the infeed chute with one 3/8 x 1-1/4" flange bolt (F) and 3/8" nylock nut.
4. Route the harness on the infeed chute DDC controller through the wire clips on the top of the infeed chute and through the clamp (D) and attach to the connector underneath the chip feed roller.
5. Secure the harness to the wire clips with cable ties.
6. Tighten all hardware.

INSTALL LICENSE PLATE LIGHT



1. Attach the license plate light (A) to the chute support with two #10-24 nuts and #10-24 x 3/4" screws (B).
2. Route the wire harness along the channel and connect to the license plate light.
3. Secure the harness in the channel to the wire clips with cable ties.

2.3 ATTACH DIGITAL DISPLAY CONTROLLER MOUNT ASSEMBLY

1. Remove the bolts (1) and nuts (2) attaching the digital display controller mount assembly (3) to the inside of the chute.
2. Attach mount assembly to the outside of the chute as shown.
3. Route harness using the zip ties and two holders (4) shown in Figure 2.5. Leave excess harness at the controller to allow rotation of the enclosure from side to side

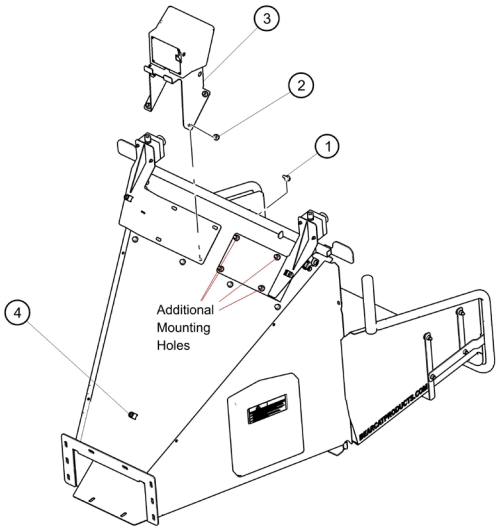


Figure 2.5, Digital Display Controller Enclosure

NOTE

The controller mount assembly can be attached to the chute in either set of mounting holes.

2.4 ATTACH DISCHARGE TUBE

1. Attach one clamping ring (1) and one spacer ring (2) to discharge tube base (3) using three 3/8" × 1-1/4" bolts (4) and nylock nuts (5). Tighten leaving 1/16" gap to assist in mounting to flange. See Figure 2.6.
2. Slide the tube onto the mounting flange on the chipper frame. The discharge clamp (1) should slide underneath the lip of the flange. Tighten the bolts to secure it.
3. Install the second half of the spacer (2) and clamp ring (1) on the discharge tube with 3/8" × 1-1/4" bolts (4) and nylock nuts (5).
4. Attach lanyard with discharge pin (6) as shown in Figure 2.8. Loop on lanyard installed below nut located under discharge handle.

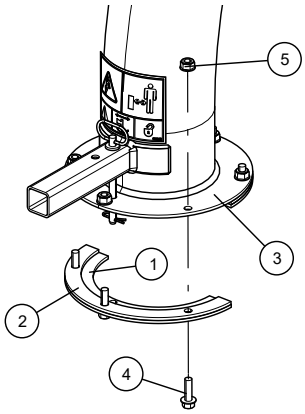


Figure 2.6, Attach Clamp Ring and Spacer

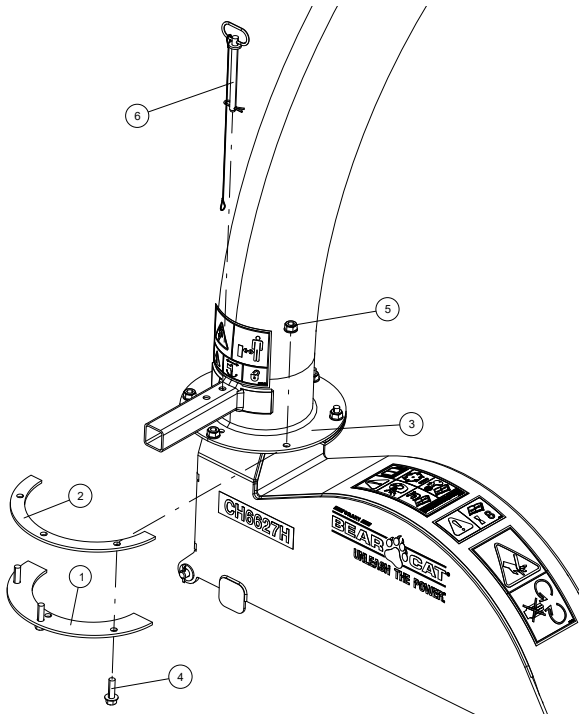


Figure 2.7, Attach Discharge Tube

NOTE

Keep nuts as tight as possible while allowing the discharge tube to freely turn.

5. Lubricate the tube by applying grease to the grease zerk at the base of the tube. Rotate the tube and apply grease until the tube rotates freely.
6. Rotate the tube 360 degrees and lock it in place with the lock pin to make sure it is mounted correctly.
7. Attach the discharge deflector (7) to the discharge tube. Connect the deflector with two 5/16" × 1-1/4" bolts (8) through the lower hole in the discharge tube. Run these bolts through the inside of the tube, 3/8" washer (12), deflector, 5/16" washer (13), and then knob (9).

8. Finish bolting the deflector to the tube with two 5/16" × 1" bolts (10) through the end hole in the discharge tube and secure with 5/16" washers and nylock nuts (11).

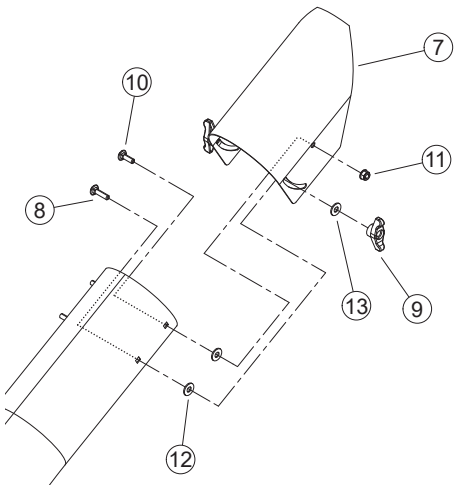


Figure 2.8, Attach Discharge Deflector

2.5 ADD OIL TO ENGINE

Check the oil level and, if needed, fill the engine crankcase with the type and amount of oil specified in the engine owner's manual.

2.6 INSTALL BATTERY

You will need to purchase a battery. Choose a battery that meets or exceeds the engine manufacturer's specifications. Consult your engine owner's manual or authorized dealer for specification details.

To install the battery:

1. Open the battery box (8-1/4" × 5-1/2" × 6") and insert battery into the battery box.
2. Attach the positive (red) battery cable from the engine to the positive (+) battery terminal.
3. Attach the negative (black) battery cable from the engine to the negative (-) battery terminal.
4. Secure the cover on the battery box with the strap.

WARNING

To avoid sparks and a possible explosion or fire due to a short circuit, do not touch the positive (+) battery terminal and any surrounding metal with tools, jewelry or other metal objects. When installing battery cables, connect the positive (+) cable first and the negative (-) cable last.

2.7 CHECK/ADD HYDRAULIC FLUID

Hydraulic fluid drives the feed roller. The machine was shipped with fluid, as it was tested at the factory. However, check the fluid levels before initial operation and add if necessary.

The hydraulic pump requires premium hydraulic fluids containing high quality rust, oxidation, and foam inhibitors. These include premium turbine oils, API CD engine oils per SAE J183, M2C33F or G automatic transmission fluids meeting Allison C-3 or Caterpillar TO-2, and certain specialty agricultural tractor fluids.

IMPORTANT

For additional information, please see the chart under Temperature Operating Window (Section 7).

2.8 FILL THE FUEL TANK

WARNING

Gasoline and diesel fuels are highly flammable and their vapors are explosive. To prevent personal injury or property damage:
Store fuel only in approved containers, in well ventilated, unoccupied buildings, away from sparks or flames. A container with a capacity of 2 gallons or less with a pouring spout is recommended. Do not fill the fuel tank while the engine is hot or running, since spilled fuel could ignite if it comes in contact with hot parts or sparks from ignition. Do not start the engine near spilled fuel. Never use fuel as a cleaning agent.
DO NOT MIX OIL WITH FUEL.

Use only those types of fuels that are recommended in your engine owner's manual.

To add fuel:

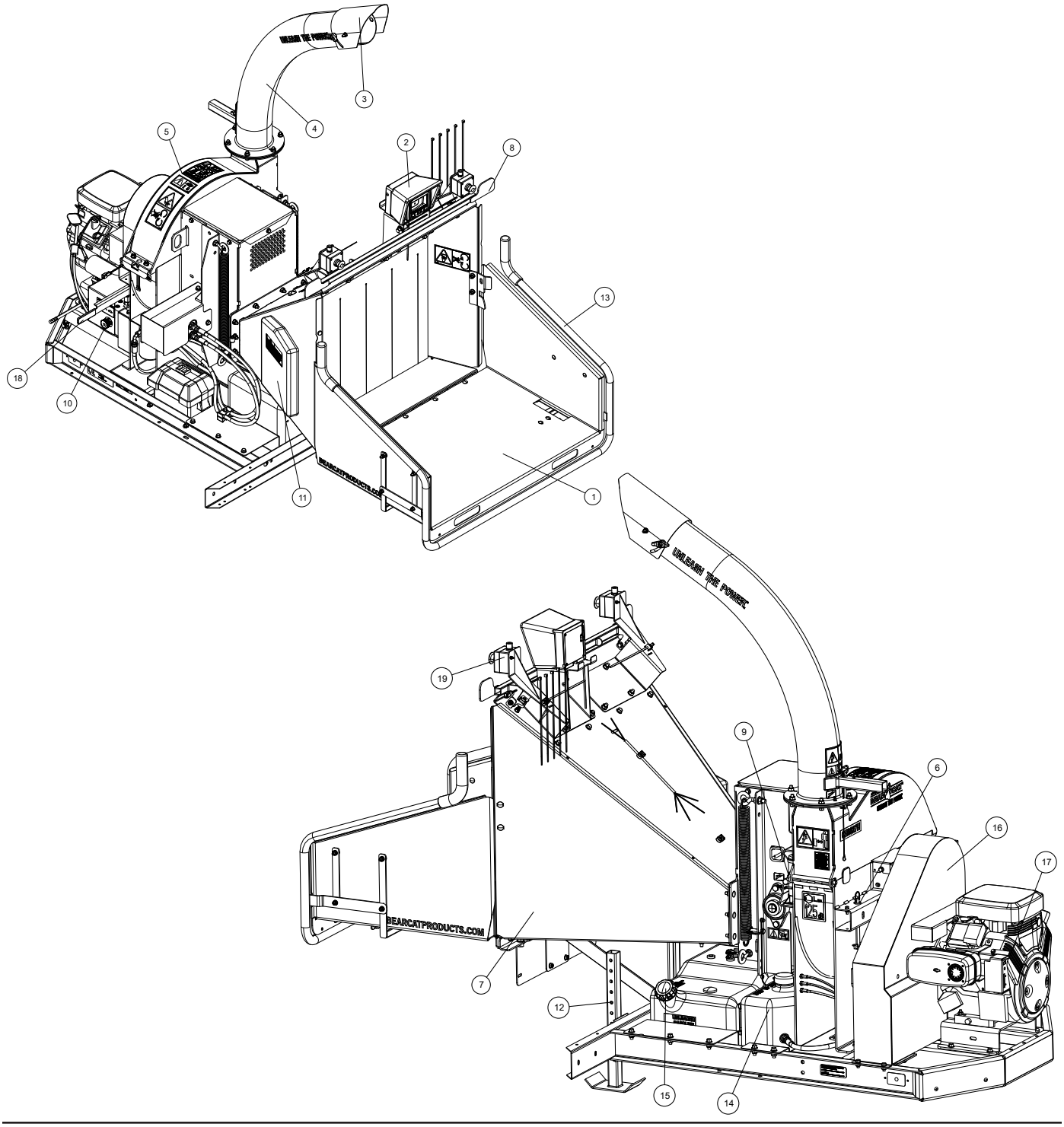
1. Stop engine, wait for all parts to stop moving and disconnect spark plug wire. Remove key from key switch. Allow the engine and muffler to cool for at least three minutes.
2. Clean area around fuel fill cap and remove cap.
3. Using a clean funnel, fill fuel tank to 1/2" below bottom of filler neck to provide space for any fuel expansion. Install fuel fill cap securely and wipe up any spilled gasoline.

3 FEATURES & CONTROLS

Section

Understanding how your machine works will help you achieve the best results when using your chipper. The following descriptions define the features and controls of your machine.

REFER TO ENGINE OWNER'S MANUAL FOR FURTHER ENGINE OPERATING INSTRUCTIONS.



1. CHUTE EXTENSION TRAY

The feed chute has an extension tray that folds down. Raise the extension tray to an upright position and secure with latch before towing the machine.

2. DIGITAL DISPLAY CONTROLLER

Used to control the chipper. See Sections 4 and 6 for more information.

3. DISCHARGE CAP

Directs the discharge of material vertically. Adjust the discharge cap by turning the knobs located on the side. Turn knob counterclockwise to loosen discharge cap. Adjust to desired position. Turn knob clockwise to secure discharge cap.

4. DISCHARGE TUBE

Directs the discharge of chipped material horizontally. The discharge tube can be rotated 360° horizontally by removing the pin and rotating the discharge tube until the discharge faces the desired position. Replace the pin in one of the holes on the base of the discharge.

5. ROTOR ACCESS COVER

Tilts up to expose rotor.

6. ROTOR LOCK

Use the rotor lock to hold the rotor in place when doing any maintenance work. See Section 5.2.

7. FEED CHUTE

Materials to be chipped are fed into the feed chute, through the feed roller, to the chipper blades.

8. TOP SAFETY BAR

In the event of an emergency, push the top safety bar and feed roller will reverse.

9. FEED ROLLER LIFT JACK

Used to lift the feed roller. The feed roller can be raised to inspect and service the machine and to clear a plugged rotor. Secure the feed roller in the raised position using the provided snap pin.

10. FEED ROLLER SPEED CONTROL

Controls the speed of the feed roller. Allows the operator to have better control over the material being fed into the chipper. Turning the knob clockwise will decrease the speed of the feed roller. Turning the knob counterclockwise will increase the speed of the feed roller.

11. MANUAL CONTAINER

Conveniently holds your manuals.

12. REAR STABILIZER

Prevents the chipper from tipping when disconnected from tow vehicle. Always have in UP position and clear from ground when transporting the chipper. When disconnected from tow vehicle, place in DOWN position on a level surface.

13. KNEE BAR

In the event of an emergency, push the bar in and forward feed will stop. Hold the knee bar reset button on controller to resume operation.

14. HYDRAULIC FLUID TANK

Check level of hydraulic fluid before each use.

15. FUEL TANK

Fuel level indicator is located on top.

16. DRIVE BELT SHIELD

Never remove shields when in use.

17. ENGINE THROTTLE

This controls the speed of the engine. Increase the throttle by moving the lever to the FAST position. To decrease the throttle, move the lever to the SLOW position.

18. ENGAGEMENT HANDLE

During engine start-up, the engagement handle must be in the disengaged (UP) position. With the engine at 1/4 throttle, carefully engage the rotor by slowly pushing the engagement handle down, allowing the rotor to speed up gradually. Engaging the chipper too quickly with the engine at full or half throttle will bog down the engine and will shorten the life of the belt. See Sections 4.2 and 4.4.

19. EMERGENCY STOPS

Push either emergency stop in case of emergency. Feed roller will stop. Pull out on red button to reset

4 OPERATION

Section

As with any other piece of outdoor equipment, getting the feel for how your machine operates and getting to know the best techniques for particular jobs are important to overall good performance.

CHIPPING OPERATION

The chipping operation takes place in the middle of the machine, where hardened steel chipper blades are mounted on a rotating rotor assembly. Material fed into the chipper chute is sliced into small chips and propelled out through a discharge tube.

WARNING

Before operating your machine, be sure you read and understand all safety, controls and operating instructions in this owner's manual and on your machine. Failure to follow these instructions can result in serious injury or property damage.

WARNING

Move machine to a clear, level area outdoors before starting. Do not operate in the vicinity of bystanders. Make sure cutting chamber is empty before starting.

4.1 STARTING ENGINE

BEFORE ATTEMPTING TO START THIS MACHINE, MAKE SURE THE BELT IS DISENGAGED AND THE HANDLE IS IN THE "START" POSITION.

NEVER ATTEMPT TO START MACHINE WITH THE DRIVE BELT ENGAGED.

1. Check engine oil level before starting.
2. Place the throttle control midway between the SLOW and FAST positions. Place the choke control into the CHOKE position.
3. Place the chipper engagement lever in the START position.
4. Use key switch to start the engine.
5. Move the choke to the RUN position.

- **For a cold engine:** gradually return the choke to the OFF position after the engine starts and warms up.
- **For a warm engine:** use of choke may not be necessary for restart of a warm engine. If it is needed, return choke to the OFF position once the engine starts.

4.2 OPERATING THE CHIPPER

After the engine has been started and properly allowed to warm to an operating temperature, you can begin operating the chipper. To properly start and operate the chipper, follow the steps below:

1. **AFTER** engine is warmed and ready for use, move the throttle control back to approximately 25% of full throttle.
2. When engine is running at approximately 25% of full throttle, **SLOWLY** engage belt by using the belt engagement lever.

   DO NOT engage the belt with engine running at high RPM.

   Engaging belt while engine is running at high RPM will result in significant belt squealing and damage.

   Engaging belt while engine is running at high RPM can also damage vital drive components of the chipper.
3. If the chipper engine stalls while engaging the belt, return the engagement handle back to the START position, restart engine, **SLIGHTLY** increase throttle and attempt engagement again.
4. Once the belt is engaged, **SLOWLY** increase throttle to 100% or full throttle.
5. **ALWAYS** run the chipper at 100% or full throttle when chipping material.

4.3 CHIPPER OPERATION GUIDELINES

WARNING

Read and follow all safety instructions in this manual. Failure to operate the machine in accordance with the safety instructions **MAY RESULT IN PERSONAL INJURY!**

The machine chips a variety of materials into a more readily decomposed or handled condition. The following guidelines will help you get started.

1. **Gradually increase engine speed until full throttle is achieved.** When the controller light is steady green the engine speed is high enough to begin to chip.
2. **ALWAYS** run engine at full operating speed before starting to chip material.
3. **Engage the hydraulic feed** by pushing the forward button from the Chipping Screen (see Section 4.7 for more details on utilizing the Digital Display Controller).
4. **If the chipper rotor slows,** the feed roller will stop automatically to process backed up material. Feed material more evenly.
5. **If the chipper jams,** the feed roller will reverse momentarily to remove the branch. Once the branch is removed, rotate it before reinserting into the chute. Alternately insert and retract the limb or insert continuously at a rate that will not kill the engine.
6. **Sharpen the chipping blades periodically.** Check the sharpness of the blades every 5-15 hours. Refer to the Service and Maintenance section for sharpening instructions.
7. **Limbs fed in to the chipper chute must be 6" (15.2 cm) in diameter or less.** Trim side branches that cannot be bent enough to feed into the chipper chute. Hold small diameter branches together in a bundle and feed in simultaneously.
8. **Alternate green or fresh cut material with dry material to lubricate the chipping blades for longer life and better performance.** Chipping dead, dry material will create heat and dull the chipping blades quicker.
9. **ALWAYS feed brush from the side of the chipper chute,** rather than from the front. Step aside to avoid being hit by the brush moving into the chipper.
10. **ALWAYS place limb, butt end first, into the chipper chute until it contacts the chipper blades.** The actual feed rate of the limb into the chipper will depend on the type of material fed and sharpness of the cutting blades.
11. **NEVER use the belt engagement to clear a plugged rotor.** This may cause belt damage. Refer to the instructions for clearing a plugged rotor in the Service and Maintenance section.
12. **NEVER** attempt to clear a plugged rotor or discharge with the engine running. **ALWAYS** shut engine OFF and remove the spark plug wire before servicing any part of this machine.
13. **NEVER** attempt to chip pieces of metal, rock, bottles, cans or other foreign objects.

CAUTION

- **Never** lean over the chipper chute to push objects into the cutting device. Use a push stick or brush paddle.
- **Never** use shovels or forks to feed brush. They can cause extensive damage if they contact the blades. In addition, metal pieces can be ejected from the chipper chute and cause serious injury or death.
- **Never** feed brush into the chute with your feet.
- **Never** use hands or feet to clear materials that build up in the chute.

CAUTION

- Obtain and wear safety glasses at all times when operating the machine.
- Do not wear loose fitting clothing.
- The operator should always wear heavy boots, gloves, pants and a long-sleeved shirt.
- Use common sense and practice safety to protect yourself from branches, sharp objects, and other harmful objects.

4.4 SLOWING AND STOPPING THE CHIPPER ROTOR AND ENGINE

NEVER disengage the belt as part of the stopping or shut down process. The belt should remain engaged during the entire shutdown process.

Leaving the belt engaged is a vital part of proper shutdown and ensures the rotor stops spinning in conjunction with the engine shutting off.

TO PROPERLY SLOW DOWN AND STOP THE ROTOR AND ENGINE

1. With the belt still engaged, slowly move the throttle to the SLOW position with the belt still engaged.
2. Allow the engine to run at slow idle for 30-60 seconds.
3. Stop the engine by moving the throttle to the STOP position or turning off the ignition switch.
4. Allow rotor to come to a complete stop.
5. Once the engine is off and the rotor has completely stopped, the belt can be disengaged by moving the belt engagement handle back to the START position.

NOTE

The rotor will continue to turn for some time after the engine has been shut off. Make sure rotor has stopped completely before inspecting or servicing machine.

4.5 FEED ROLLOR SPEED CONTROL

This machine is equipped with a flow control to vary the speed of the feed roller. This allows the operator to increase the feed speed when processing smaller material and lower the speed when handling material close to the maximum capacity of the machine. It is recommended that operators start using the machine at the lower limits of the speed control and slowly increase the speed, according to the size and hardness of the material being chipped.

While occasional stopping and starting of the feed roller is normal, frequent stopping and starting of the feed roller and/or rapid decreases in chipper rotor RPMs is an indication that the feed speed is too high. Continued operation under such conditions can result in plugging of the discharge, belt damage, and inefficient operation.

Recommended Procedure: Turn the flow control knob fully clockwise to bring the feed roller to a stop. Turn the flow control knob counter clockwise two full turns and begin feeding material into the chipper. Adjust as needed.

4.6 CHIPPER FEED CONTROLLER

This machine is equipped with a Digital Display Controller (DDC). The DDC monitors the chipper rotor RPM and regulates the feed roller.

When chipper rotor RPM drops too low, the feed roller is stopped automatically to allow the chipper rotor to process material.

When the chipper rotor returns to chipping RPM, the feed roller will automatically reengage.

Try Again Feature: If the feed roller becomes obstructed, the controller will reverse the feed roller momentarily to clear the obstruction. The controller will then engage the feed roller and feed the material again.

This cycle will continue if the piece is not pulled in by the feed roller. Remove or reposition the material manually and activate the forward position.

Remember to sharpen blades when necessary so material will feed smoothly.

NOTE

The rotor sensor and safety bar sensors must be set to the correct clearance or the chipper will not operate. Set the clearance to 1/32" (the width of a credit card). The rotor sensor will flash with every rotation of the chipper rotor when the clearance is set correctly.

4.7 USING THE DIGITAL DISPLAY CONTROLLER

The feed roller FORWARD and REVERSE functions are controlled by the controller. In addition to the feed roller control functions, the controller also provides service reminders, onboard diagnostics, operating instructions, troubleshooting help and language selection.

4.7.1 MAIN MENU

After turning the key to the ON position, the Crary Bear Cat logo will be displayed followed by the screen shown in Figure 4.1.

The model number of the chipper is displayed in the upper right hand corner. The model number shown should match the model of the chipper. If it does not, contact Crary Bear Cat Service at 1-866-625-4520 for help.

A scannable QR code is located in the lower left corner. It will lead you to the Crary Bear Cat website where owner's and parts manuals can be viewed and downloaded.

Battery Voltage is displayed in the upper left hand corner.

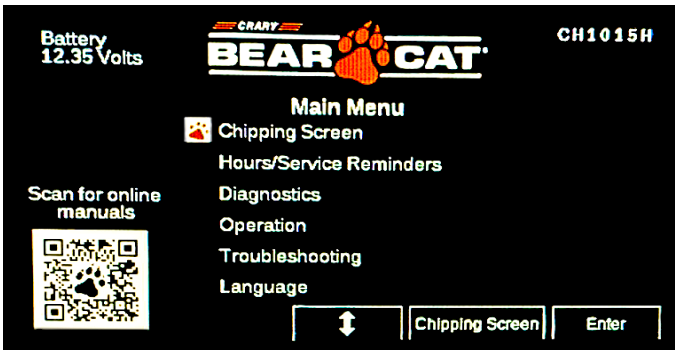


Figure 4.1, DDC Main Menu

Battery Voltage is displayed in the upper left hand corner.

The Main Menu is at the center of the screen. The menu is navigated by using the up and down keys on the Navigation Button, located directly below the menu.

After selecting the menu option of your choice, use the Enter key on the far right to move to the selected screen.

The Main Menu has six selections:

- **Chipping Screen –** The chippers' feed roller system is controlled from this screen. The Chipping Screen can also be selected by the button to the right of the Navigation Button.
- **Hours/Service Reminders –** Shows the total hours on the chipper as well as hours remaining until the next service on the blades/anvil, belts, bearing lubrication, engine or hydraulic system is required.

  If the chipper needs service, a service reminder will flash just above the Enter key. The user should navigate to the Hours/Service Reminders screen for more information on the service required. The Hours/Service Reminders are described in Section 4.7.3.
- **Diagnostics –** Faults in the chipper control system, which can be detected by the controller, are shown here.
- **Operation –** Contains basic information on the operation of the chipper. Navigate the three screens of this section with the Navigation Button.
- **Troubleshooting –** Basic troubleshooting information to help diagnose problems with the engine, belt drive or other problems that may occur during chipping. Navigate the screens of this section with the Navigation Button.
- **Language –** Allows the selection of the language displayed on the controller. Choices are English, French, Spanish, Portuguese, Norwegian, Chinese, and Russian.

NOTE

The Chipping Screen is accessible from any screen by pressing the Chipping Screen button.

4.7.2 CHIPPING SCREEN

To begin chipping, the user needs to enter the Chipping Screen (see Figure 4.2). This can be done in one of two ways:

1. Selecting Chipping Screen from the Main Menu and pressing Enter, or
2. Pressing the Chipping Screen button to the right of the Navigation Button.

In the upper left hand corner of the screen is a reminder that the feed roller speed can be adjusted. The adjustment occurs at the control valve, the location of which varies by model. In general, the speed of the feed roller should be slower for large diameter material and faster for smaller diameter material. See chipper owner's manual for detailed instructions.

Below the Feed Roller Speed image is an empty area of the screen that will flash Check blades/anvil when the chipper blades or anvil require service.

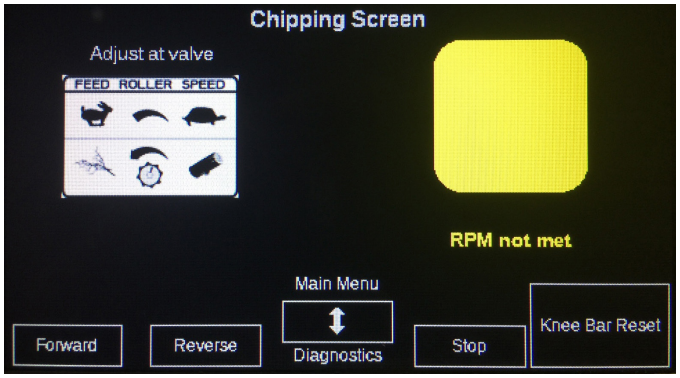


Figure 4.2, Chipping Screen

After servicing the blades and anvil, the service indicator will need to be reset. See Section 4.7.3 for information on resetting the service indicators.

The large indicator in the upper right hand corner and the text box below it will give one of four indications:

- **Flashing Green –** The chipping rotor has not achieved enough RPM to begin chipping. It is not possible to engage the feed roller in the forward direction when the indicator is flashing green. The text box below the indicator will display "RPM Not Met."
- **Solid Green –** The chipping rotor has achieved sufficient RPM to begin chipping. The feed roller can now be engaged in the forward direction. The text box below the indicator will display "FORWARD," "REVERSE," or "STOP."

NOTE

Consult the Controller Manual (P/N 71983-00) for more information on using the Diagnostics screen to help troubleshoot the chipper control system.

- **Solid Red –** The knee bar has been activated and the feed roller is now stopped. The text block below the indicator will display "Hold Knee Bar Reset."

  The Knee Bar functions as an emergency stop system for the feed roller to immediately stop the feed roller system. Occasionally, branches or limbs may contact the Knee Bar with enough force to activate the Knee Bar safety circuit. When this occurs the operator will need to reset the Knee Bar safety system with the "Knee Bar Reset" button to continue chipping. The "Knee Bar Reset" button will need to be held for two seconds to reset the system.

  Carefully check to be certain the infeed chute and feed roller are clear and that it is safe to continue chipping before resetting the Knee Bar Reset.

- **Solid Yellow –** There is a fault in the chipper control system. The text box below the indicator will display "Go to Diagnostic Screen."

The buttons to the left and to the right of the Navigation Button are used to control the feed roller.

The Forward button starts the feed roller turning forward and feeds material into the chipper.

The Reverse button reverses the direction of the feed roller and will push the material back toward the operator.

The Stop button stops the feed roller.

The Knee Bar Reset button resets the controller so Forward and Reverse can be re-engaged after the Knee Bar safety system has been activated. **To re-engage the feed roller safety system after the Knee Bar safety system has been activated, the operator must press and hold the Knee bar Reset button for two seconds.**

Any time the Knee Bar safety system is activated, carefully check that the infeed chute and feed roller are clear and it is safe to continue chipping before resetting the Knee Bar safety system.

4.7.3 HOURS/SERVICE REMINDERS

NOTE

Anytime the user leaves the Chipping Screen, the feed roller will automatically stop. The user will have to re-enter the Chipping Screen and press the Forward button again to resume chipping.

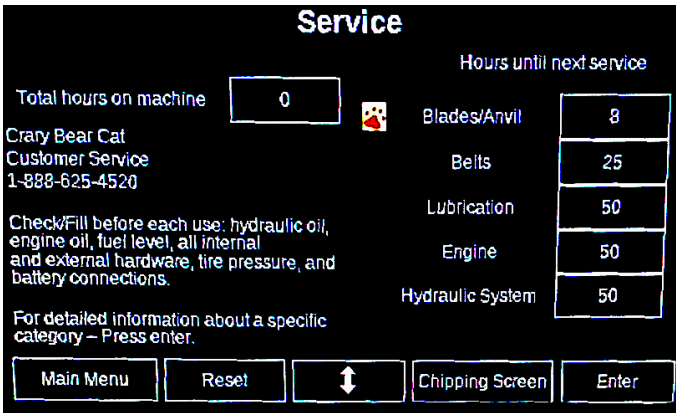
The Hours/Service Reminders screen is shown in Figure 4.3.

The Total hours on the chipper are shown in the upper left corner of the screen. The total hours are based on "Key On" time and cannot be reset.

The service reminders on the right hand side of the screen are all count down timers. They all show the time until the next service is required in each category.

Additional information for each category can be found by moving the cursor next to a category with the Navigation Button and pressing Enter.

- **Blades/Anvil –** Hours are based on the time the feed roller is in Forward since that is the only time the blades can actually chip wood.
- **Belts –** Hours are based on "Key On" time.
- **Lubrication –** Hours are based on "Key On" time.



- **Engine –** Hours are based on "Key On" time. The service interval is dependent on the model selected. (Does not apply to PTO driven models.)
- **Hydraulic System –** Hours are based on "Key On" time. First service interval is at 50 hours; subsequent service intervals are at 200 hours.

After a service operation has been performed, that Service Indicator Reminder will need to be reset.

Using the Navigation Button, move the cursor to the appropriate service reminder, then press and hold the Reset button for three seconds.

4.7.4 LANGUAGE

The language used to display messages on the controller can be changed to one of four options on the Language selection screen.

1. From the Main Menu select the Language option at the bottom of the menu and press Enter.
2. Use the Navigation Button to move the cursor to the desired language.
3. Press the Enter button on the far right of the display to select that language.

5 Section SERVICE & MAINTENANCE

5.1 MAINTENANCE SCHEDULE

The items listed in this service and maintenance schedule are to be checked, and if necessary, corrective action taken. This schedule is designed for units operating under normal conditions. If the unit is operating in adverse or severe conditions, it may be necessary for the items to be checked and serviced more frequently.

SEE ENGINE OWNER'S MANUAL FOR FURTHER ENGINE MAINTENANCE AND TROUBLESHOOTING INFORMATION.

SERVICE AND MAINTENANCE SCHEDULE								
		FREQUENCY						
COMPONENT	MAINTENANCE REQUIRED	REFER TO ENGINE OPERATOR'S MANUAL	BEFORE EACH USE	EVERY 8 HOURS	EVERY 25 HOURS	EVERY 50 HOURS	EVERY 200 HOURS	EVERY YEAR
Air cleaner	Check and clean (1)	●						
Air intake	Clean (1)	●						
Engine oil	Change (1)	●						
Fuel filter	Replace	●						
Spark plug	Check condition and gap	●						
Hydraulic oil	Check/fill		●					
Engine oil	Check/fill		●					
Fuel tank	Check/fill		●					
All internal and external nuts and bolts	Check tightness		●					
Battery connections	Check		●					
Chipper anvil	Check clearance and re-torque to 75 ft-lbs. (2)			●				
Chipper blades	Check sharpness and re-torque to 120 ft-lbs. (2)			●				
Entire machine	Clean			●				
Spark arrestor*	Clean			●				
Drive belt	Check				●			
Hydraulic drive belt	Check				●			
Belt tension	Check				●			
Belt/pulley alignment	Check				●			
Grease zerks	Lube					●		
Hydraulic oil filter	Replace						●	
(1) Perform more frequently under extremely dusty conditions.								
(2) Perform more frequently when chipping dry or dirty wood.								
*If equipped								
As the Limited Warranty states, failure by the Owner to perform normal maintenance will void the machine's warranty. The aggressive, high-speed nature of chipping REQUIRES THE OWNER TO PERFORM THE ABOVE LISTED NORMAL MAINTENANCE. Special consideration to maintain and re-torque the CHIPPER ANVIL, CHIPPER BLADES, and ALL INTERNAL AND EXTERNAL NUTS AND BOLTS is the sole responsibility of the Owner. Failure by the Owner to do so shall be cause for denial of warranty.								

WARNING

BEFORE INSPECTING OR SERVICING ANY PART OF THIS MACHINE, SHUT OFF POWER SOURCE, DISENGAGE THE HYDRAULICS, OPEN SHIELD AND MAKE SURE ALL MOVING PARTS HAVE COME TO A COMPLETE STOP.

5.2 ROTOR LOCK

WARNING

The rotor assembly has a lock mechanism. When working on the rotor assembly, use the lock mechanism at all times.

Follow the steps below to install the rotor lock:

1. Install pin into the chipper housing and rotor.
2. Remove pin when service and/or maintenance is completed.

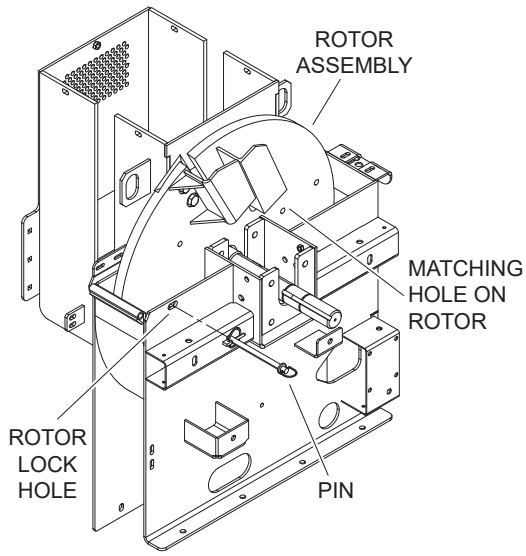


Figure 5.1, Rotor Lock

5.3 RAISE/LOWER ACCESS COVER

Follow the steps below to raise or lower the access cover:

1. Rotate the discharge tube so it is parallel to the access cover.
2. To raise the access cover, remove the two 3/8 × 1" carriage bolts and nylock nuts that secure the cover to the chipper housing.
3. Lower the access cover and secure to the chipper housing using two 3/8 × 1" carriage bolts and nylock nuts.

5.4 CHIPPER BLADES MAINTENANCE

The chipper blades will eventually become dull, making chipping difficult and adding extra strain on the machine. **CHECK THE SHARPNESS OF THE BLADES EVERY 5-15 HOURS OF OPERATION AND SHARPEN AS NEEDED.**

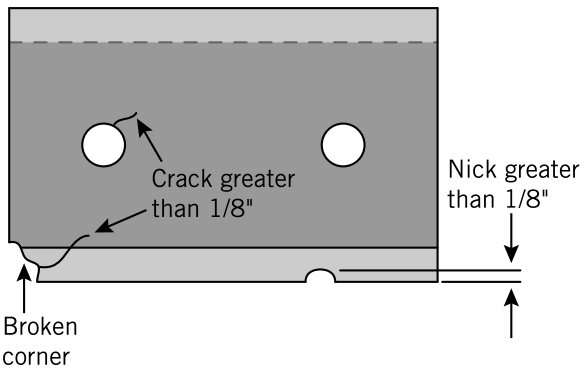
The controller will indicate a blade/anvil service reminder every eight hours as a reminder to check the chipper blades. To reset the service reminder, see Section 4.7.3.

Your blades need to be sharpened if:

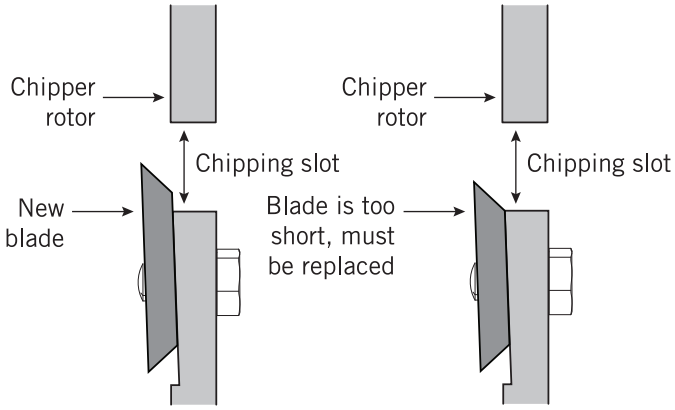
- Machine vibrates severely when material is fed into the chipper.
- Chips discharge unevenly or have stringy tails, especially when chipping green branches.

Before you sharpen the chipping blades, check for permanent damage. Replace the blade if:

- There are cracks, broken corners or nicks greater than 1/8" (see below).



- The base of the cutting edge is worn or has been re-sharpened so that it no longer extends past the chipping slot (see below).



WARNING

BEFORE INSPECTING OR SERVICING ANY PART OF THIS MACHINE, SHUT OFF POWER SOURCE, DISENGAGE THE HYDRAULICS, OPEN SHIELD AND MAKE SURE ALL MOVING PARTS HAVE COME TO A COMPLETE STOP.

5.5 REMOVING THE BLADES

WARNING

Chipping blades are sharp! Use caution when working on machine to avoid injury.

1. Remove the two 3/8" retaining bolts securing the access cover to the main frame assembly.
2. Open access cover to allow access to rotor. Rotate the rotor so that the bolts holding the chipper blades are accessible.
3. Install the rotor lock (Section 5.2). The rotor is now restrained for removing the blades. To access the remaining blades, remove pin and reposition rotor. Return pin to the rotor lock hole.
4. Remove the two bolts that hold the blade to the rotor. The hardware can be reused. Repeat for the remaining blade.
5. The blades have two edges and can be reversed one time before sharpening.

5.6 SHARPENING THE BLADES

The blades can be ground on a bench grinder or by a professional.

1. Never sharpen or grind the mounting surfaces of the blades. This will cause the edge to roll and the blade will be damaged, resulting in poor chipping performance.
2. Regrind the angled edge of the chopping blades to 30 degrees (Figure 5.2). Use the blade angles on the anvil spacing gauge when sharpening the blades to achieve the proper angle (see Figure 5.3).

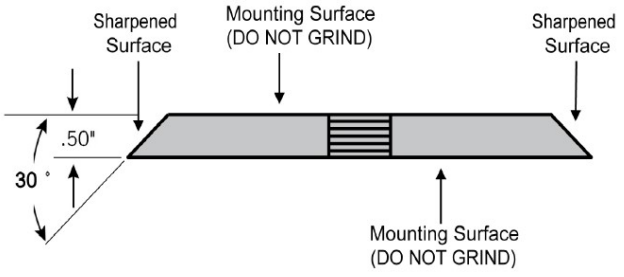


Figure 5.2, Chipper Blade Surfaces

3. Be careful when grinding so that the blade does not become overheated and change color. This will remove the heat-treated properties.

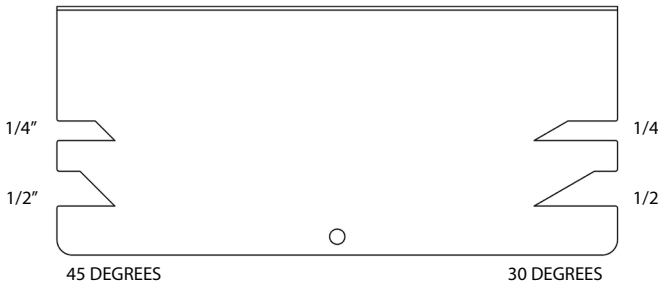


Figure 5.3, Anvil Spacing Gauge

4. Use short grinding times and cool with water or some type of liquid coolant.
5. Remove an equal amount off each blade to maintain rotor balance.
6. Small imperfections such as nicks and burrs on the flat side of the blade will not affect the chipping performance of the machine.
7. For blades that have been repeatedly sharpened, ensure that the sharpened surface extends past the chipping slot opening. If it does not extend past the opening, the blades should be replaced (see Section 5.4).

5.7 INSTALLING THE BLADES

1. Install the rotor lock (Section 5.2). The rotor is now restrained for installing the blades.
2. Place a blade on the rotor and attach using original hardware. Torque the bolts to 120 ft-lbs. (162 Nm). Repeat for the remaining blade.
3. Remove rotor lock.
4. Lower the access cover and secure to the chipper housing using two 3/8" retaining bolts.

5.8 SETTING CHIPPER BLADE CLEARANCE

The chipping blades should clear the chipper block located directly under the chipper chute by 1/16 to 1/8". To adjust the blade clearance, proceed as follows:

1. Remove the two 3/8" retaining bolts securing the access cover to the main frame. Open access cover to allow access to anvil. See Figure 5.4 for anvil location.
2. Loosen the three 1/2" bolts that hold the chipper anvil to the frame.

WARNING

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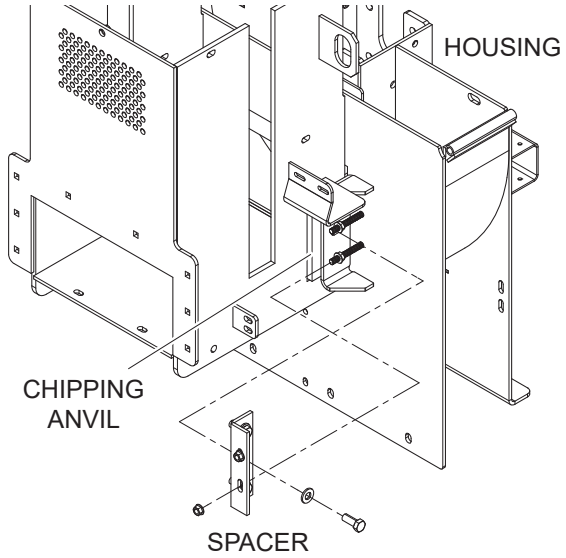

Figure 5.4, Chipping Anvil Location

3. Measure the amount of clearance between chipping blades and chipping anvil from inside of housing. Adjust both rods of the anvil spacer to achieve a uniform gap.
4. Raise the feed roller (see Figure 5.6). Install anvil spacing gauge (see Figure 5.5).
5. Check clearance on all the blades. Remove anvil spacing gauge.
6. Tighten bolts on chipping anvil to 75 ft-lbs. and resume operation.

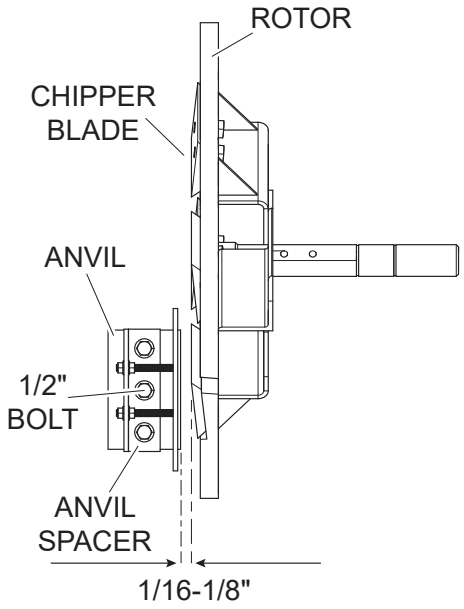

Figure 5.5, Chipper Blade/Anvil Clearance

7. If chipping anvil edge is damaged or worn unevenly, remove the three bolts holding the anvil and use one of the other three edges. Adjust for correct measurement. When all four edges have been used, replace anvil.

5.9 CLEARING A PLUGGED ROTOR

WARNING

If the machine becomes plugged, lift the engagement handle, shut off the engine, disconnect the spark plug wire and allow the machine to come to a complete stop before clearing debris. Do not operate the machine without proper guards and shields in place.

Feeding too large or too much material at once may plug the chipper. To clear a plugged rotor, proceed as follows:

1. Turn off engine key switch. Allow all moving parts to come to a complete stop. Lift engagement handle.
2. Remove the two 3/8" retaining bolts holding the access cover to the chipper frame and lift up access cover.
3. Remove the lock pin from storage position (see Figure 5.6).

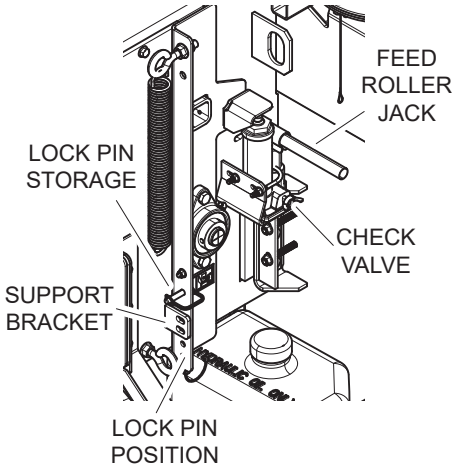

Figure 5.6, Feed Roller Jack

⚠ WARNING ⚠

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4. Turn check valve clockwise to engage the jack pump.
5. Pump the handle to raise the feed roller until the lock pin position aligns with one of the support bracket holes.
6. Secure the position by putting the lock pin through the support bracket and lock pin position.
7. Clean the debris away from the chipper rotor. Turn the rotor by hand to be sure it is free to rotate. Be careful to avoid the chipper blades when cleaning out the debris.
8. Remove the lock pin and put it back in storage position. **LEAVING THE LOCK PIN IN ANY OTHER POSITION MAY INTERFERE WITH FEED ROLLER OPERATION.**
9. Turn the check valve counterclockwise to disengage the pump and lower the jack.
10. Close access cover and replace bolts.
11. Start the engine. Follow start up procedures in Section 4.1.

5.10 DRIVE BELTS

5.10.1 REPLACING ROTOR DRIVE BELT

Check the condition of the drive belt annually or after every 50 hours of operation, whichever comes first. If the belt is cracked, worn, frayed, or stretched, replace it.

To replace the belt:

1. Remove the belt guard (1).
2. Remove idler pulley (2) by removing its 1/2 × 4-1/2" bolt (3), spacers, washer and nut.
3. Remove the drive belt (4) from the pulleys and discard.
4. Inspect pulleys for wear. Replace the pulleys if they are cracked or worn so that the belt contact area is not smooth and flat.
5. Install new belt on pulleys and lower belt idler.

NOTE

If belt does not easily install, turn the two belt tension bolts counterclockwise an equal number of turns and slide engine closer to chipper until belt can be installed.

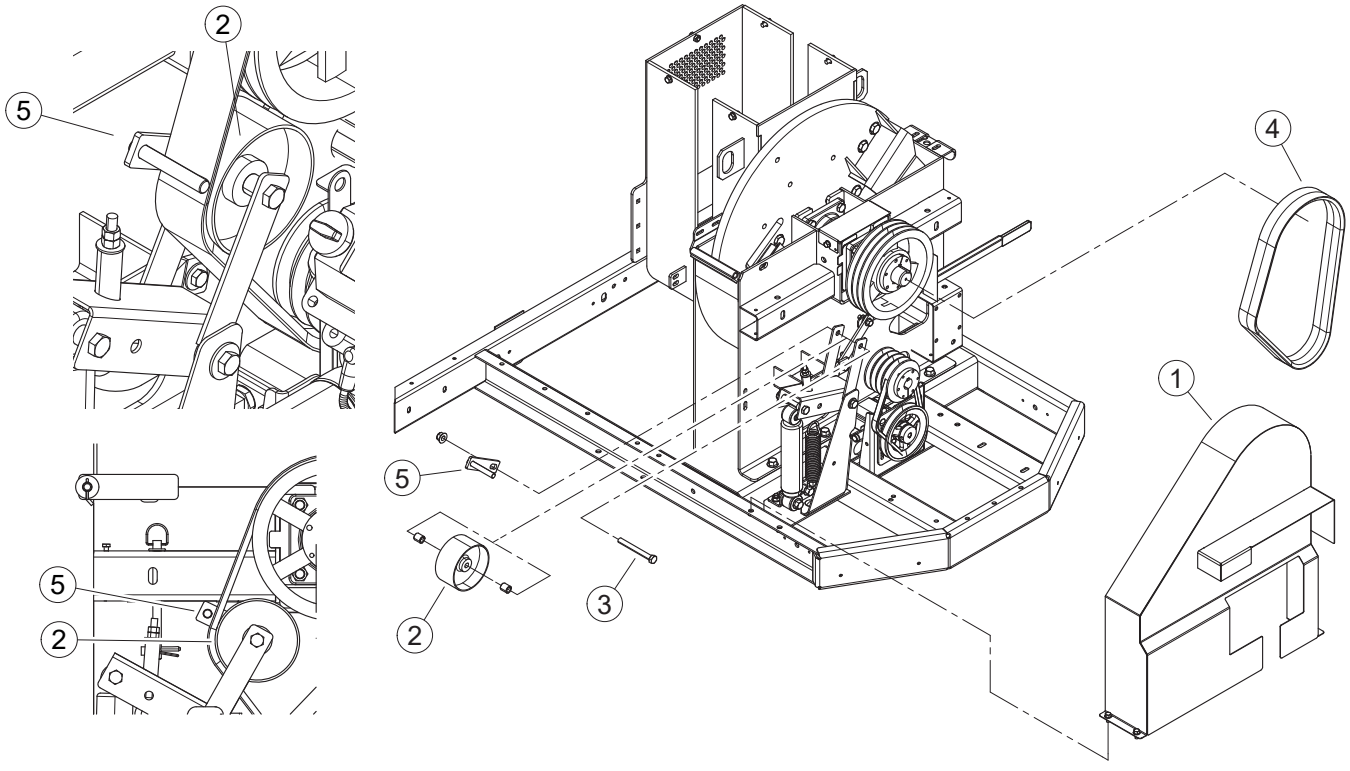

Figure 5.7, Replacing Rotor Drive Belt

⚠ WARNING ⚠

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6. Reinstall the belt idler pulley into the idler arm weldment using the 1/2" hardware. Make sure the belt pin (5) is positioned so that it does not contact the bolt while engaged and tighten securely.
7. Check pulley alignment by placing a straight edge across the face of both pulleys. Adjust the lower (engine) pulley if necessary to bring them into alignment.
8. Check belt tension and adjust if needed. For proper belt tension, tighten the adjustment bolt on the tension spring(s) of the idler pulley until there is 1/8-3/16" gap between the coils when the idler is engaged.
9. Reinstall belt guard.

5.10.2 REPLACING HYDRAULIC DRIVE BELT

Check the condition of the hydraulic drive belt annually or after every 50 hours of operation, whichever comes first. If the belt is cracked, worn, frayed, or stretched, replace it.

To replace the belt:

1. Remove the drive belt as explained in the previous section.
2. Loosen the two bolts below the pulley as shown in Figure 5.8 and push the pulley slightly upward to loosen the tension on the hydraulic belt.

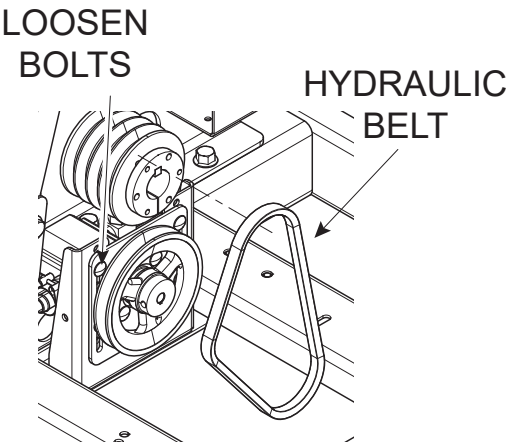

Figure 5.8, Replacing Hydraulic Belt

3. Remove the hydraulic belt from the pulleys and discard.
4. Install new hydraulic belt on pulleys.
5. Push the pulley downwards and tighten the bolts to tension the belt.
6. Install drive belt on pulleys.
7. Lower belt idler.
8. Reinstall the belt idler pulley into the idler arm weldment using the 1/2" hardware. Tighten bolt to proper torque.
9. Check pulley alignment by placing a straight edge across the face of both pulleys. Adjust the lower (engine) pulley if necessary to bring them into alignment.
10. Check belt tension and adjust if needed. For proper belt tension, tighten the adjustment bolt on the tension spring(s) of the idler pulley until there is 1/8 to 3/16" gap between the coils when the idler is engaged.
11. Reinstall belt guard.

5.11 ROTOR BEARINGS

1. Remove the two 3/8" retaining bolts holding the access cover to the main frame assembly.
2. Open access cover to allow access to rotor.
3. Follow Section 5.11.1 to remove drive belt.
4. Remove the bolts attaching the pulley bushing to the pulley.
5. Install the bushing push bolts and tighten alternately one flat at a time to remove the bushing from the pulley.
6. Remove the pulley and the pulley bushing.
7. Remove bearing cap and bearing lock.
8. Loosen both bearing set screws on each bearing.
9. Remove four bearing mounting bolts on each bearing.
10. Lift rotor out of chipper housing.
11. Remove bearings and install new bearings with grease zerks. Reinstall shims.
12. Install the eight bearing mounting bolts with washers through the bearing and chipper housing. Torque to 75 ft-lbs.
13. Verify that there is no shaft end play.
14. Install the bearing locks.
15. Tighten bearing set screws.
16. Verify blade to anvil clearance is 1/16 to 1/8" on all blades.
17. Place pulley bushing on shaft.
18. Place pulley on bushing.
19. Align pulley with engine pulley using a straight edge.
20. Alternately tighten bushing bolts one flat at a time.
21. Follow instructions in Section 5.11.1 to reinstall belt.
22. Close access cover.
23. Replace the two 3/8" retaining bolts holding the access cover to the main frame assembly and tighten.

WARNING

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5.12 HYDRAULIC FEED MAINTENANCE

Hydraulic fluid drives the feed roller. Check the fluid level daily and fill as needed. The fluid and filter should be changed and system cleaned if the fluid becomes contaminated with foreign matter (water, dirt, grease, etc.) or if the fluid has been subjected to temperatures greater than the maximum recommended.

The hydraulic pump requires premium hydraulic fluids containing high quality rust, oxidation, and foam inhibitors. These include premium turbine oils, API CD engine oils per SAE J183, M2C33F or G automatic transmission fluids meeting Allison C-3 or Caterpillar TO-2, and certain specialty agricultural tractor fluids.

WARNING

Handle pressurized hydraulic fluid carefully. Escaping pressurized hydraulic fluid may penetrate your skin causing serious injury. This fluid may also be hot enough to burn. Serious infection or reactions can develop if immediate proper medical treatment is not administered.

In the unlikely event that the oil is completely drained from the hydraulic system, oil must be added and any air bubbles must be purged from the system. To do this:

1. Clean all system components (reservoir, fittings, etc.).
2. Fill the hydraulic reservoir.
3. Start the engine and run at the lowest possible RPM.
4. As you purge air from the unit, the oil level in the reservoir will drop and bubbles may appear in the fluid. Refill the reservoir as necessary.
5. Run the feed roller in both directions for several minutes until any remaining air purges from the unit. Refill the reservoir as necessary.
6. Shut down the engine, check for and correct any fluid leaks, and check the reservoir level. Add fluid if necessary. The hydraulic pump is now ready for operation.

NOTE

Hydraulic pressure controlled by the relief valve is factory set at 2500 PSI.

5.13 CHANGE HYDRAULIC FLUID FILTER

Change the hydraulic oil filter after the first 50 hours of operation and every 200 hours thereafter.

To change the hydraulic oil filter:

1. Using an oil filter wrench, turn the filter counterclockwise.
2. Once the filter becomes loose, turn it out the rest of the way with your hand.
3. Properly discard old filter.
4. Lube the rubber seal on the new filter with clean hydraulic oil.
5. Install the filter onto the threaded pipe. Turn with your hand until the filter is finger tight.
6. Using an oil filter wrench, tighten the filter another 1/2 turn.
7. Check hydraulic oil level and fill if necessary.

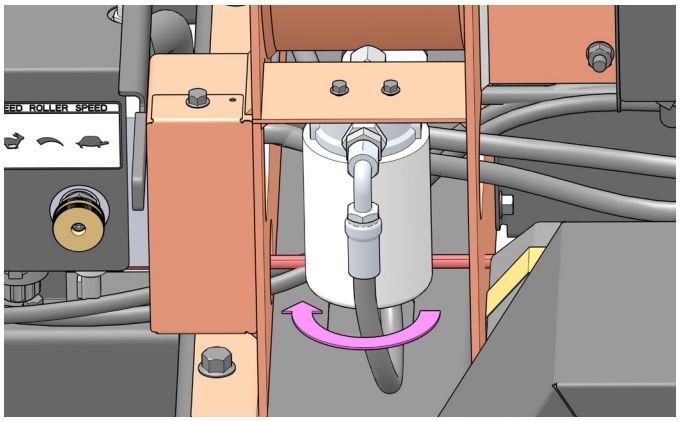

Figure 5.9, Hydraulic Filter Removal

5.14 CHANGE OIL

Check the oil level before each use. Change oil as directed in the engine owner's manual.

⚠ WARNING ⚠

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5.15 LUBRICATION

⚠ WARNING ⚠

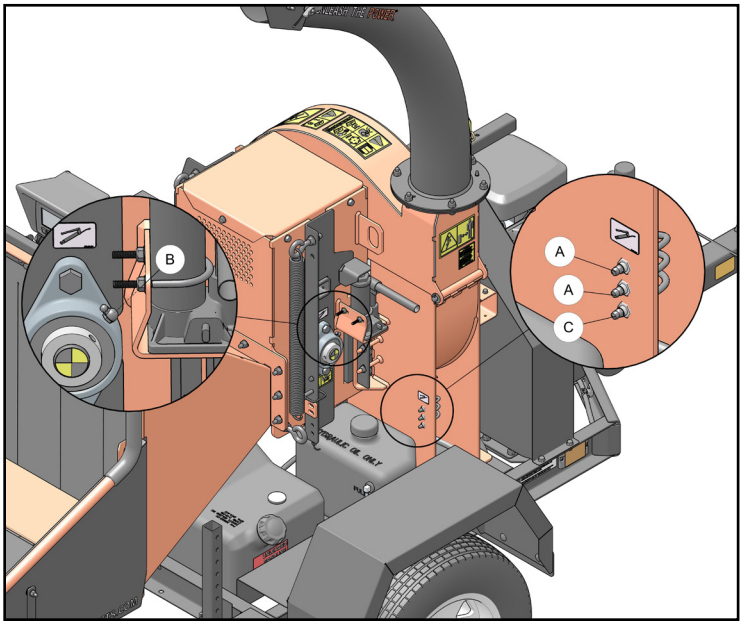
Polyurea and lithium-based greases are not compatible. Mixing the two grease types may lead to premature failure.

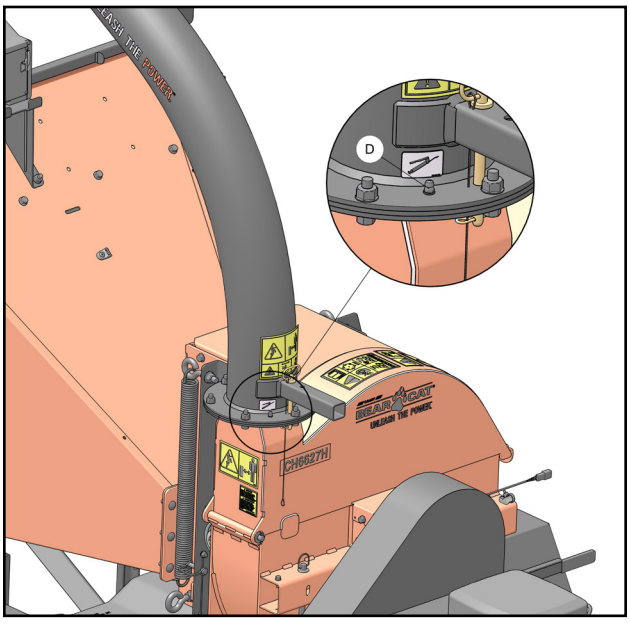
NOTE

Do not over grease bearings. Overfilling can lead to excessive heat and/or unseating of the seals. Add grease slowly and under light pressure. Whenever possible, rotate bearing slowly while lubricating.

Lubricate the machine periodically with a lithium-based grease. Extreme working conditions will require more frequent greasing.

Grease Interval				
	8 Hours	50 Hours	100 Hours	As Needed
Number of Zerks		2 Rotor Bearings (A)	1 Feed Roller Bearing (B)	1 Belt Engagement (C) 1 Discharge Tube (D)





Visit https://qrco.de/CBCGreaseZerks to learn how to properly locate grease points and grease your Crary Bear Cat machine for maintenance.

6 Section TROUBLESHOOTING

6.1 FLASH CODES FOR THE DIGITAL DISPLAY CONTROLLER

FREQUENCY	CAUSE	ACTION TO TAKE
GREEN		
Solid	Chipper has reached required RPM and forward feed is available	Machine ready for chipping
1/2 second on, 1/2 second off	Chipper has not reached chipping RPM upon initial startup	Slowly increase RPM
1/2 second on, 1/2 second off	Chipper RPM dropped while chipping	Feed roller will automatically pause to bring RPM back up
RED		
Solid	Knee bar was activated	Hold Knee Bar Reset
Solid	Battery voltage is low	Charge battery. Check charging system.
YELLOW		
Solid	Controller has detected an electrical system fault	Use diagnostics screen information on controller or see troubleshooting section in manual

6.2 TROUBLESHOOTING GUIDE

Before performing any of the corrections in this troubleshooting chart, refer to the appropriate information contained in this manual for the correct safety precautions and operating or maintenance procedures. Contact your dealer or Crary® Bear Cat® for service problems with the machine.

PROBLEM	POSSIBLE CAUSES	REMEDY
Controller light is not on	No power to controller	Check the resettable fuse breaker and/or condition of battery
Engine will not start	Lack of fuel or oil	Fill fuel tank and check oil level
	Spark plug disconnected	Connect spark plug
	Kill switch on access cover is damaged	Test kill switch. Replace if it is not working
	Dirty, stale, or contaminated fuel	Drain and refill fuel tank with fresh, clean unleaded regular gasoline or diesel. Replace fuel filter.
	Internal engine problems	See your engine dealer
Engine or rotor stalls or stops	Chipper rotor housing or discharge tube is plugged	Shut off engine and disengage belt engagement. Refer to manual for information on clearing a plugged rotor. Never use the belt engagement to clear a plugged rotor.
	Feeding material that is too large	Limit branch size to rated capacity
Engine overheats	Cooling system plugged	Clean cooling fan and cooling fins on the radiator or engine block
	Improper coolant level	Fill engine to correct coolant level. Refer to the engine owner's manual
Engine stalls or belt squeals when engaging belt	Engaging belt too fast	Reduce engagement speed
	Belt tension too loose	Adjust tensioner. Replace belt if needed.
Machine chips poorly	Dull chipper blades	Flip, sharpen, or replace
	Drive belts loose or worn	Inspect drive belts, adjust or replace if needed
	Feeding material that is too large	Limit branch size to rated capacity
Engine runs, but dies or does not accelerate properly	Air filter dirty	Clean or replace
	Fuel filter dirty	Replace
	Fuel vent plugged	Clean or replace
	Spark plug dirty/worn	Clean and adjust or replace
	Carburetor vibration	Adjust
	Cooling system dirty/plugged	Clean
	Spark arrestor* plugged	Clean or replace
Cannot engage belt	Improper belt installation, belt not under belt guide	Install belt properly, install belt under belt guide
	Improper belt tension	Adjust belt tension, Replace belt or belt tension spring if needed
Excessive belt wear	Not using correct belt	Contact your nearest authorized dealer to order the correct belt for your chipper
	Pulley(s) damaged or worn	Replace pulley(s)
	Pulley(s) not in alignment	Align pulley(s) to within 1/16" with straight edge
	Belt(s) tension too loose	Replace belt or belt tension spring

*If equipped

PROBLEM	POSSIBLE CAUSES	REMEDY
During chipping the sensor gives a solid green light, but the feed roller runs intermittently	Rotor RPM sensor is set too far away	Open the shield and check rotor sensor, Gap should be 1/32" (thickness of a credit card). Clean face of sensor. Replace if necessary.
Hard to feed chipper, requires excessive power to chip	Dull chipper blades	Flip, sharpen, or replace
	Obstructed discharge	Use branch or similar object to clear discharge tube
	Improper blade clearance	Set blade/anvil clearance to recommended distance
Excessive vibration while running	Dull chipper blades	Flip, sharpen, or replace
	Drive system vibration	Check drive belts, bearings, and pulleys for bad or worn areas. Check for dull chipper blades.
	Rotor out of balance	Inspect rotor for damaged or missing chipper blades, replace if needed
	Chipper blade to anvil clearance is incorrect	Set blade/anvil clearance to recommended distance
Feed roller operation is reversed	Wire harness connection at valve is incorrect	Switch wire harness connection from A to B and B to A. Green and white wire should connect to A on valve. Orange and white wires should connect to B on valve
	Hose connection from valve to motor is incorrect	Ensure that the hoses go from port A on valve to port A on motor and B to B
Cannot achieve solid green for forward feed	Drive belts loose or worn	Inspect drive belts, adjust or replace if needed
	Engine/Tractor is not achieving full RPM	Confirm that engine is achieving full RPM. Confirm that PTO is 540 RPM.
Knee bar sensor does not stop feed roller	Knee bar linkage is not free to move	Check knee bar linkage for full range of motion
	Harness connection or sensor failure	Check harness connection. Adjust or replace sensor.
Feed roller alternates between forward and reverse	Hydraulic motor is malfunctioning	Hydraulic motor needs to be replaced
	Pressure switch fault	Unhook the pressure switch, test for operation. If the forward feed works or the feed roller stops “ratcheting,” replace the pressure switch.
Feed roller will not achieve Forward or Reverse	Forward or Reverse coil on hydraulic valve is malfunctioning or faulty wiring	Plug wire from the faulty coil, as indicated on the Diagnostic Screen, into the other coil. Start chipper, engage belt, and achieve solid green indicator. Push the button (Forward or Reverse) for the faulty coil. If the feed roller works opposite of the intended direction, replace coil and reconnect wires: Green and white to A (Forward), Orange and white to B (Reverse). If the feed roller does not operate in the opposite direction, look for a fault in the wiring.
	Faulty wiring	Check harness for: grounded wire, cut wire, etc.

7 Section SPECIFICATIONS

DESCRIPTION	ENGLISH	METRIC
Engine	Briggs & Stratton Vanguard® 627cc	
Fuel Capacity	9 gallons	34.1 liters
Maximum Chipper Capacity	6" diameter	15.2 cm diameter
Chipper Blades	4 reversible (5" × 4" × 0.5")	4 reversible (12.7 cm × 10.2 cm × 1.3 cm)
Chipping Anvil	4-edge adjustable (6.5" × 4" × 0.625")	4-edge adjustable (16.5 cm × 10.2 cm × 1.6 cm)
Rotor Size	26" diameter × 1"	66 cm diameter × 2.5 cm
Rotor Speed	1650 RPM	
Rotor Weight	165 lbs.	75 kg
Discharge Tube Size	6"	15.2 cm
Discharge Tube Height	97"	2.5 m
Hydraulic Feed Rate	0-98 fpm	0-30 m/min
Hydraulic Oil Tank Capacity	3 gallons	11.4 liters
Hydraulic Belt	29.6"	75.2 cm
Drive	Triple-banded Belt, 3RB48	
Drive Belt Size	51.1"	129.8 cm
Weight	1595 lbs.	723 kg
Machine Dimensions (L×W×H)	105 x 59 x 82	267 cm × 150 cm × 208 cm

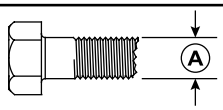
SPECIAL TORQUE REQUIREMENTS			
LOCATION	HARDWARE DESCRIPTION	TORQUE (UNIFIED INCH)	TORQUE (METRIC)
On chipper rotor, blade mounting cap screws	M16 × 2.0 × 3.0 hex HD with patch	120 ft-lbs.	162.7 Nm
Controller mounting hardware*	8-32 screws	20 in-lbs.	2.26 Nm
Back of controller	USB seal cap**	20 oz-in	0.14 Nm

*Use of medium strength thread locker required.

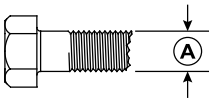
**If removing cap to program, cap and rubber washer must be reinstalled to correct torque to maintain IP67 seal.

7.1 BOLT TORQUE

The tables below are for reference purposes only and their use by anyone is entirely voluntary, unless otherwise noted. Reliance on their content for any purpose is at the sole risk of that person and any loss or damage resulting from the use of this information is the responsibility of that person.

SAE Grade and Head Markings	SAE 2	SAE 5	SAE 8	BOLT DIAMETER
				

BOLT DIAMETER (A)	BOLT TORQUE*					
	SAE 2		SAE 5		SAE 8	
	Nm	FT-LBS.	Nm	FT-LBS.	Nm	FT-LBS.
1/4"	7.5	5.5	11	8	16	12
5/16"	15	11	23	17	34	25
3/8"	27	20	41	30	61	45
7/16"	41	30	68	50	95	70
1/2"	68	50	102	75	149	110
9/16"	97	70	149	110	203	150
5/8"	122	90	203	150	312	230
3/4"	217	160	353	260	515	380
7/8"	230	170	542	400	814	600
1"	298	220	786	580	1220	900
1-1/8"	407	300	1085	800	1736	1280
1-1/4"	570	420	2631	1940	2468	1820

METRIC Grade and Head Markings	4.8	8.8	10.9	12.9	BOLT DIAMETER
					

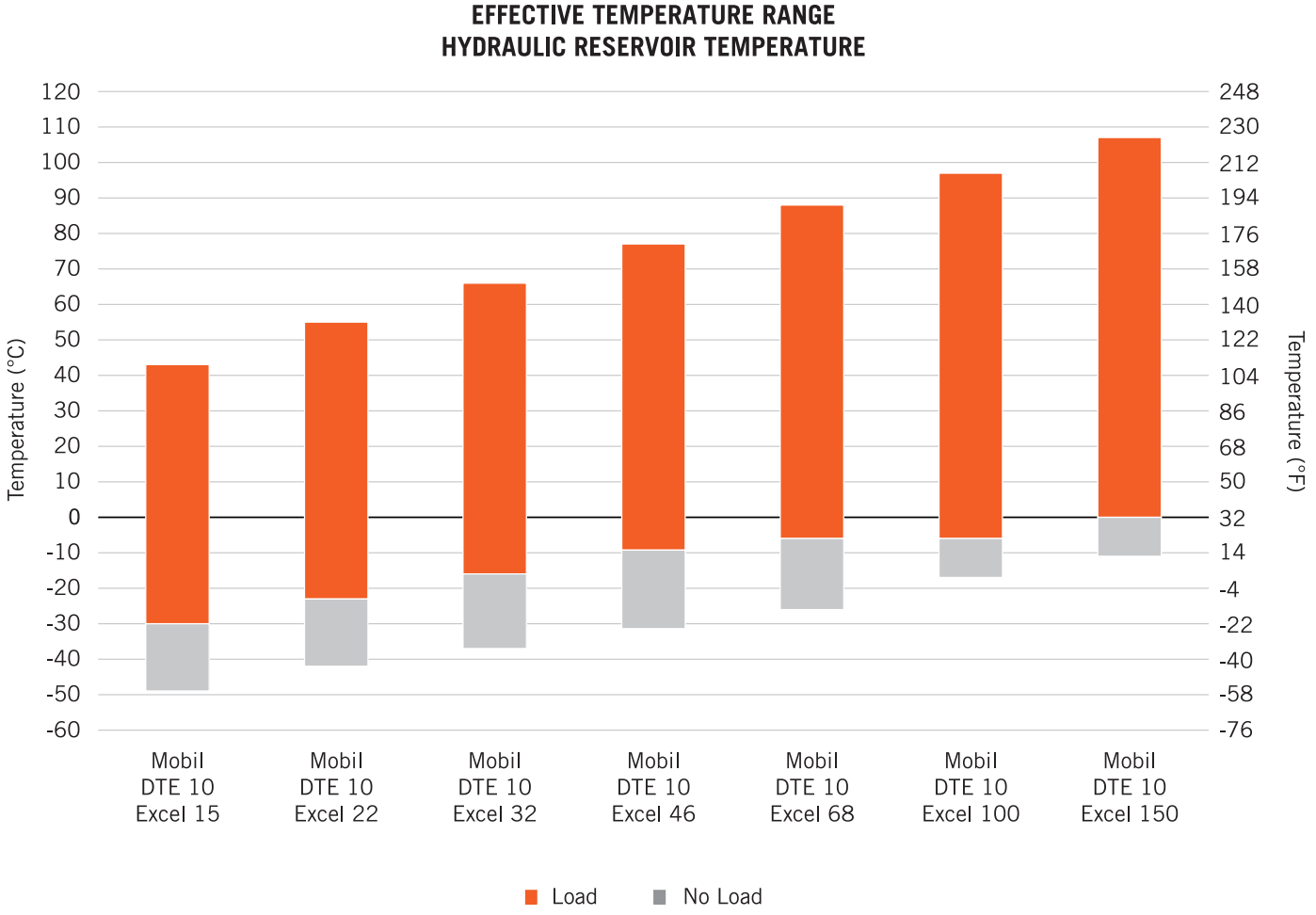
BOLT DIAMETER (A)	BOLT TORQUE*							
	4.8		8.8		10.9		12.9	
	Nm	FT-LBS.	Nm	FT-LBS.	Nm	FT-LBS.	Nm	FT-LBS.
M3	0.5	0.4	–	–	–	–	–	–
M4	3	2.2	–	–	–	–	–	–
M5	5	4	–	–	–	–	–	–
M6	6	4.5	11	8.5	17	12	19	14.5
M8	15	11	28	20	40	30	47	35
M10	29	21	55	40	80	60	95	70
M12	50	37	95	70	140	105	165	120
M14	80	60	150	110	225	165	260	190
M16	125	92	240	175	350	255	400	300
M18	175	125	330	250	475	350	560	410
M20	240	180	475	350	675	500	800	580
M22	330	250	650	475	925	675	1075	800
M24	425	310	825	600	1150	850	1350	1000
M27	625	450	1200	875	1700	1250	2000	1500

*Torque value for bolts and capscrews are identified by their head markings.

Torque figures indicated above are valid for non-greased or non-oiled threads and heads unless otherwise specified. Therefore, do not grease or oil bolts or capscrews unless otherwise specified in this manual. When using locking elements, increase torque values by 5%.

7.2 TEMPERATURE OPERATING WINDOW

For the nearest Mobil lubricant supplier or technical information, including lubricant information for severe arctic operating conditions, call 800-662-4525.



ENGLISH

8 Section PARTS & OPTIONS

8.1 REPLACEMENT PARTS

FOR MACHINE SERVICE OR PARTS

For service assistance, contact your nearest authorized Crary Bear Cat dealer or the factory. For parts, contact your authorized dealer. The parts manual for your machine is available at bearcatproducts.com/Product-Support/Find-A-Product-Manual. Your dealer will need to know the serial number of your machine to provide the most efficient service. See below for information on how to identify and record the serial number for your machine.

FOR ENGINE SERVICE OR PARTS

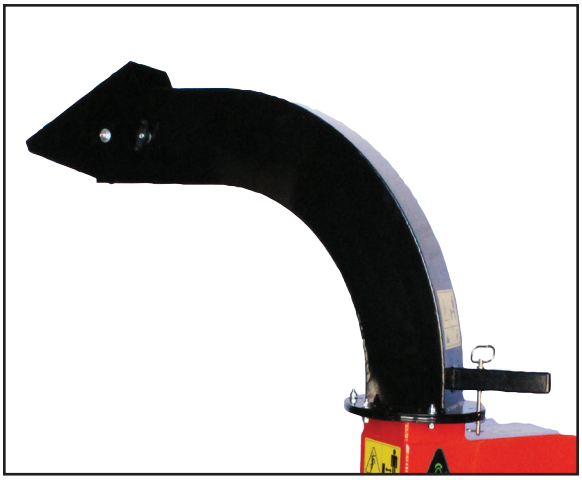
For engine service or parts, contact your nearest authorized engine dealer. Crary Bear Cat does not handle any parts, repairs or warranties for engines.

ORDERING PARTS

Only genuine Crary Bear Cat replacement parts should be used to repair the machine. Replacement parts manufactured by others could present safety hazards, even though they may fit on this machine. Replacement parts are available from your Crary Bear Cat dealer.

Provide the following when ordering parts:

- The SERIAL NUMBER of your machine.
- The PART NUMBER of the part.
- The PART DESCRIPTION.
- The QUANTITY needed.



Low Profile Discharge Chute, 71930-00

1/2" Chipper Blade Kit, 78361-00

8.2 OPTIONS

PART NUMBER	DESCRIPTION
70135-00	KIT, CH6627H ENGINE SHIELD
71930-00	KIT, 6" LOW PROFILE DISCHARGE CHUTE
78361-00	KIT, CHIPPER BLADE (1/2 INCH)
76721-00	KIT, BATTERY DISCONNECT
78921-00	KIT, SPARE TIRE HOLDER
78862-00	KIT, ELECTRIC BRAKE

Crary Bear Cat® • 237 12th St. NW, West Fargo, ND 58078
For customer service or for your nearest Crary Bear Cat dealer call 888.625.4520 | For International call 701.282.5520
BEARCATPRODUCTS.com