

4 INCH CHIPPER OWNER'S MANUAL

CH4420

Briggs & Stratton®
XR Professional Series™

P/N: 78482-00

Revision: 20250523

VIN Range: 5VJAA0116MW006750- Current

Companion to P/N: 78483-00



BEARCATPRODUCTS.COM// 888.625.4520

ENGLISH



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/](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 a vehicle identification number (VIN). VINs are located on the left side of the trailer frame near the hitch. They are 17-digit numbers of the format: 5VJAA001XXWXXXXXX. For the exact location of the VIN, 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.

VEHICLE IDENTIFICATION NUMBER

MANUFACTURED BY/FABRIQUE PAR: CRARY INDUSTRIES, INC.	
FABRIQUE/INT’D DATE:	PNEU/TIRE:
PNEU/GUM:	JANTE/RIM:
PNEU/GAUM:	PRESS DE GONF A FROID/COLD INFL:
THIS VEHICLE CONFORMS TO ALL APPLICABLE STANDARDS PRESCRIBED UNDER THE UNITED STATES AND CANADIAN MOTOR VEHICLE SAFETY REGULATIONS IN EFFECT ON THE DATE OF MANUFACTURE. CE VEHICULE EST CONFORME A TOUTES LES NORMES QUI LUI SONT APPLICABLES EN VERTU DU REGLEMENT SUR LA SECURITE DES VEHICULES AUTOMOBILES DES ETATS UNIS ET DU CANADA EN VIGUEUR A LA DATE DE SA FABRICATION.	
V.I.N./N.I.V.: 5VJAA001-XXXXXX	TYPE/TYPE DE VEHICULE: TRA/REM

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

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.

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1 Section SAFETY

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.

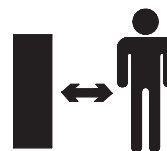
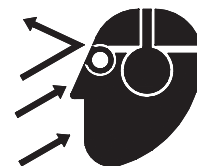
The standard muffler installed on the engine is spark arrestor capable. Spark arrestors require regular maintenance. See the Service & Maintenance section of this manual for more information.

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.
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 sharpen 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.

1.4 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.



1.5 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.

1.6 TOWING SAFETY

1. Connect hitch safety chains. Tighten trailer hitch bolts. Do not attempt to tow the trailer if the vehicle is not equipped with a 2" (50 mm) ball.
2. Do not exceed the maximum towing speed indicated on tire sidewall. Inflate tires to manufacturer's specifications as stated on the tire sidewall.
3. Optimum towing performance can be achieved by maintaining a horizontal trailer hitch.
4. Check wheel lug bolts periodically to ensure they are tight and secure.
5. Make sure the jack stand and the rear stabilizer (where applicable) on the trailer are in the UP position during towing. Place the jack stand on a level surface and secure it in the DOWN position before using.
6. Never allow passengers to ride on the machine.
7. If applicable, shut off fuel supply when towing.
8. Towing laws may vary in different countries/regions/states. It is recommended that you contact your local motor vehicle department for any special regulations that pertain to towing and know the laws of any country/region/state you travel through.

1.7 SAFETY DECALS

See Section 1.8 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.



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.

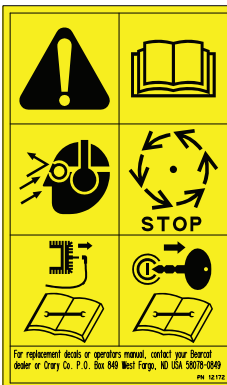


2 PN 12172

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.



7 PN 14942-00

Read and understand your 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.).



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.



8 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.



4 PN 12174

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

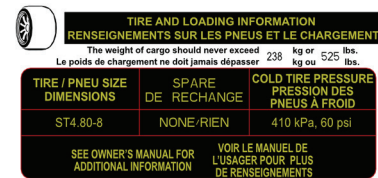


5 PN 12175

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.



9 PN 34446-00



10 PN 32327-00 ENG. & FR. (32339-00 ESP. & PORT.)

⚠ WARNING	⚠ AVERTISSEMENT	
ALWAYS use safety chains. Chains hold trailer if connection fails. You must: - CROSS chains underneath coupler. - ALLOW slack for trailer to turn. - ATTACH chain hooks securely to tow vehicle frame.	TOUJOURS utiliser des chaînes de sécurité. Les chaînes retiennent la remorque en cas de défaillance de la connexion. Vous devez : - CROISER les chaînes sous le coupleur. - LAISSER assez de jeu pour permettre à la remorque d'effectuer les virages. - FIXER solidement les crochets de chaîne au châssis du véhicule remorqueur.	

12 PN 32330-00 ENG. & FR. (32342-00 ESP. & PORT.)

⚠ WARNING	⚠ AVERTISSEMENT	
Tire, wheel or lug nut failure can cause loss of control. Before towing, you must CHECK: - Tire pressure and tread. - Tires and wheels for damage. - Lug nuts for tightness. For new and remounted wheels, re-tighten lug nuts at the first 10, 25 and 50 miles of driving.	La défaillance des pneus, des roues ou des écrous de roue peut provoquer une perte de contrôle. Avant de procéder au remorquage, vous devez VÉRIFIER: - La pression des pneus et l'état de la bande de roulement. - L'état des pneus et des roues. - Le serrage des écrous de roue. Sur les roues neuves ou remontées, resserrer les écrous de roue après les 16, 40 et 80 premiers kilomètres (10, 25 et 50 miles).	

11 PN 32328-00 ENG. & FR. (32340-00 ESP. & PORT.)

⚠ WARNING	⚠ AVERTISSEMENT	
Lights can prevent trailer from being hit by other vehicles. You must: - CONNECT trailer and tow vehicle electrical connectors. - CHECK all lights: tail lights, turn signal, and brake lights. - DO NOT TOW if lights are not working.	Les feux peuvent empêcher la remorque d'être heurtée par d'autres véhicules. Vous devez : - BRANCHER les connecteurs électriques de la remorque et du véhicule remorqueur. - VÉRIFIER tous les feux : feux arrière, clignotants et feux de freinage. - NE PAS REMORQUER si les feux ne fonctionnent pas.	

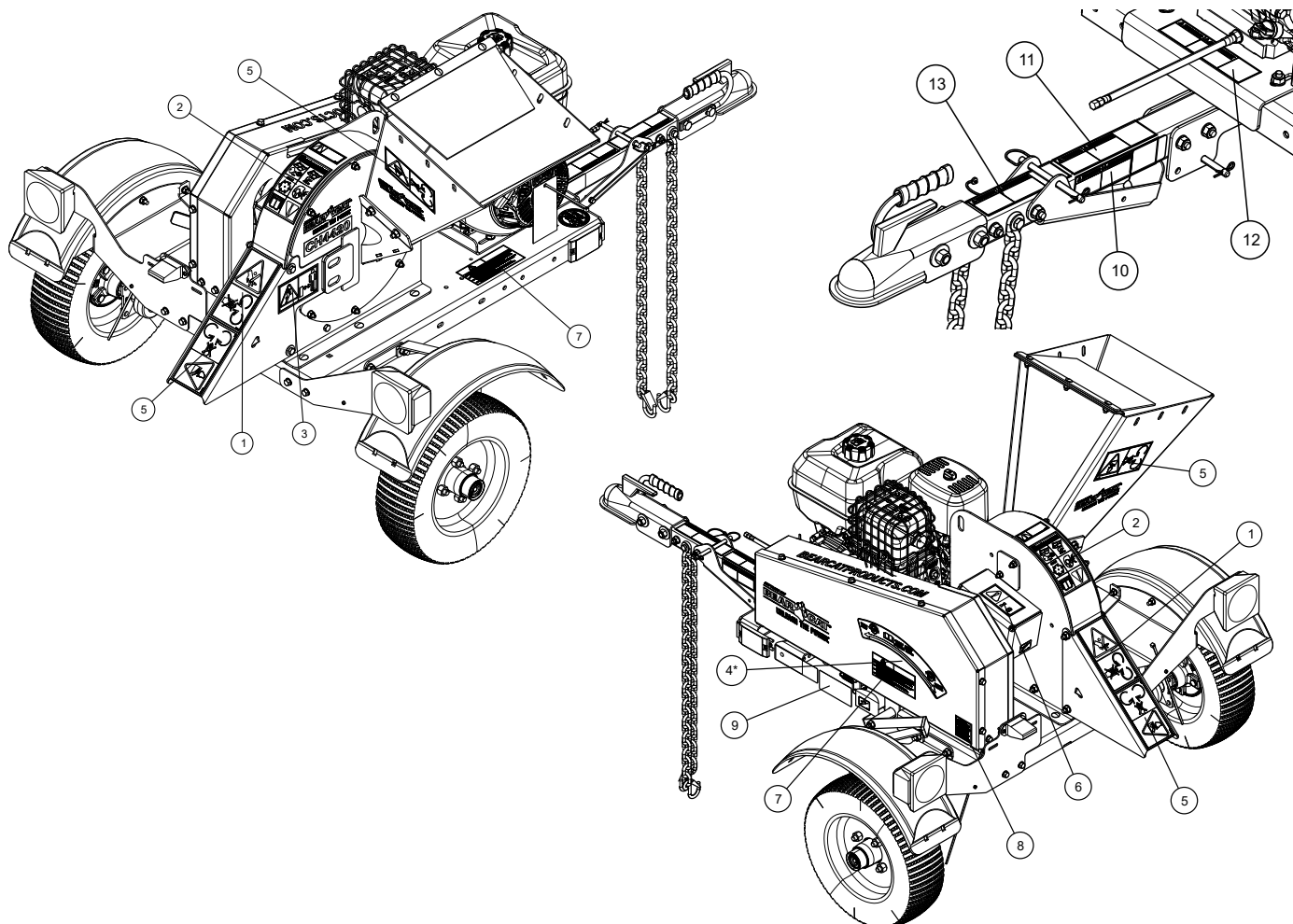
13 PN 32332-00 ENG. & FR. (32341-00 ESP. & PORT.)

⚠ WARNING	⚠ AVERTISSEMENT	
Uncoupling will cause trailer to come loose from tow vehicle. You must: - CHECK that ball LOAD RATING is same as or greater than coupler LOAD RATING. - CHECK that ball SIZE is same as coupler. - CLOSE COUPLER CLAMP on ball. - LIFT coupler upwards to test that it will not separate from ball. - LOCK coupler clamp with pin or padlock.	Lors du désaccouplement, la remorque se détache du véhicule remorqueur. Vous devez : - VÉRIFIER que la CHARGE DE BASE de la rotule est égale ou supérieure à la CHARGE DE BASE du coupleur. - VÉRIFIER que la DIMENSION de la rotule est la même que celle du coupleur. - FERMER LA BRIDE DE SERRAGE DU COUPLEUR sur la rotule. - SOULEVER le coupleur pour vérifier qu'il ne se sépare pas de la rotule. - VERROUILLER la bride de serrage du coupleur au moyen d'une goupille ou d'un cadenas.	

*Decals 10-13 not for CE compliant machines.

1.8 SAFETY DECAL LOCATIONS

The numbers below correspond to the decals in Section 1.7. 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.



2 Section ASSEMBLY



WARNING



If any bolts or nuts are dropped in the machine, be sure to remove them before starting the machine.



WARNING



Before beginning the assembly of the attachments on this chipper, brace and/or stabilize the machine to prevent it from moving, falling or tipping that may result in serious injury.

2.1 ASSEMBLY

1. Align wheels (1) with lug bolts on axle hub and secure to hub using four 1/2" lug nuts (2). Using as alternating pattern, tighten wheel into place and torque lug nuts (2) to 75 ft-lbs.
2. Place hitch pole channel (3) in position underneath trailer deck and mount to trailer deck using two 3/8" × 1" bolts (4) and 3/8-16 nylock nuts (5).
3. Apply reflectors (6) to the hitch pole assembly (7) as shown. Next, place entire hitch pole assembly (7) into the hitch pole channel (3) while aligning the front two holes with the top two holes in the hitch pole channel (3) flanges. Secure using two 3/8" × 3" bolts (8) and 3/8-16 nylock nuts (5). Place hitch pin (9) through bottom rear hole of flange (Figure 2.1) and secure with cotter pin.
4. Attach chipper chute flap (10) to hopper assembly (11) using the retaining strip (12), three 5/16" × 1" bolts (13) and 5/16-18 nylock nuts (14).
5. Mount that completed hopper assembly to the chipper housing using four 3/8" × 1" bolts (4) and 3/8-16 nylock nuts (5).

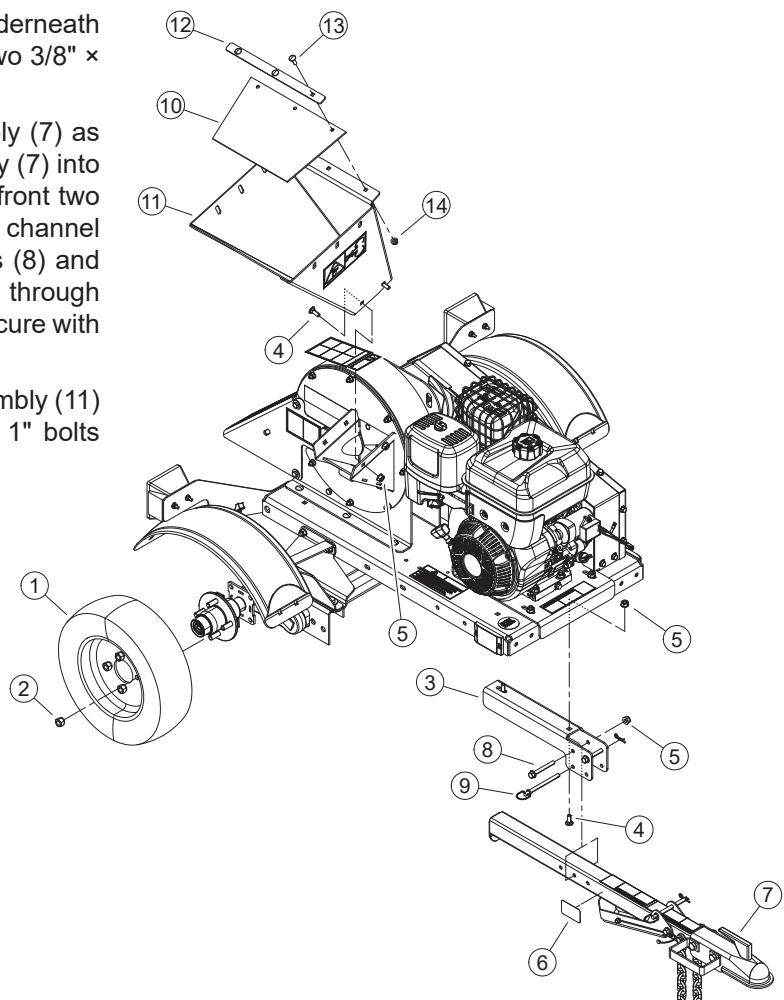


Figure 2.1, Hopper and Hitch Assembly

6. With the chipper deflector weldment in the down position (Figure 2.2), place discharge cap assembly (15) onto the housing by aligning the bolt holes of the discharge cap (15) and the bolt holes in the housing. Place the two 3/8" × 5-1/2" bolts (16) through the bolt holes. Secure by adding 3/8" flat washers (17) and nylock nuts (5) to the 3/8" × 5-1/2" bolts (16).

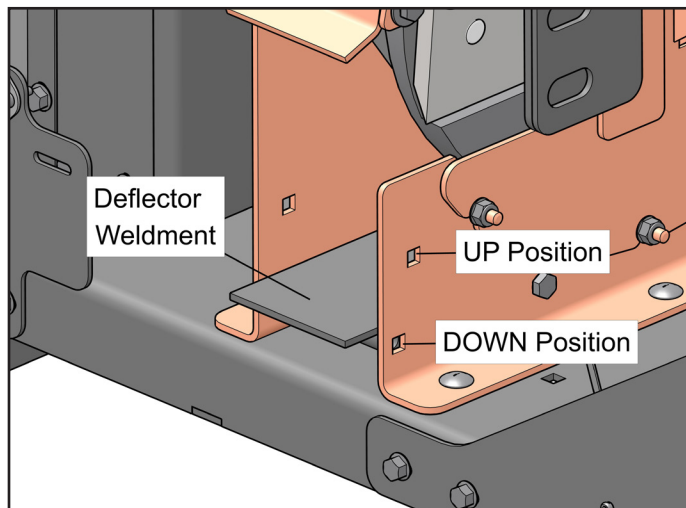


Figure 2.2, Chipper Deflector Weldment

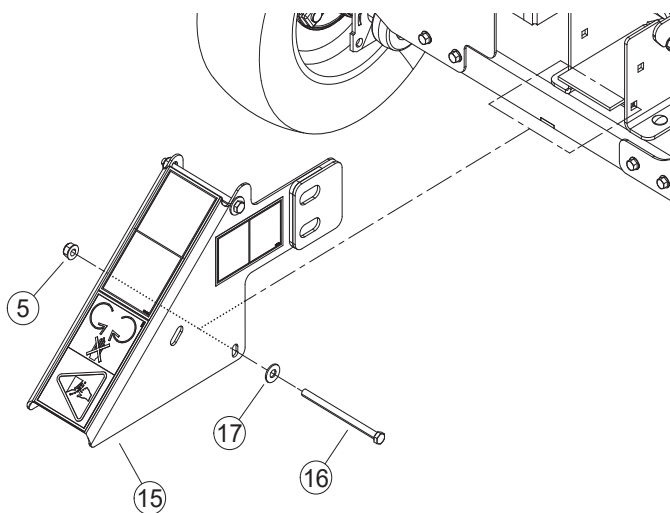


Figure 2.3, Standard Configuration Discharge Cap

2.2 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.

2.3 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 Section FEATURES & CONTROLS

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. DISCHARGE CAP

Directs the discharge of material to the ground.

2. ROTOR ACCESS COVER

Remove to expose chipper blades.

3. FEED CHUTE

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

4. JACK STAND

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.

5. SAFETY CHAINS

Safety chains are used, during towing, to prevent the chipper from completely separating from the tow vehicle in the event the chipper detaches from the tow vehicle. Cross the safety chains under the hitch and connect to tow vehicle.

6. COUPLER

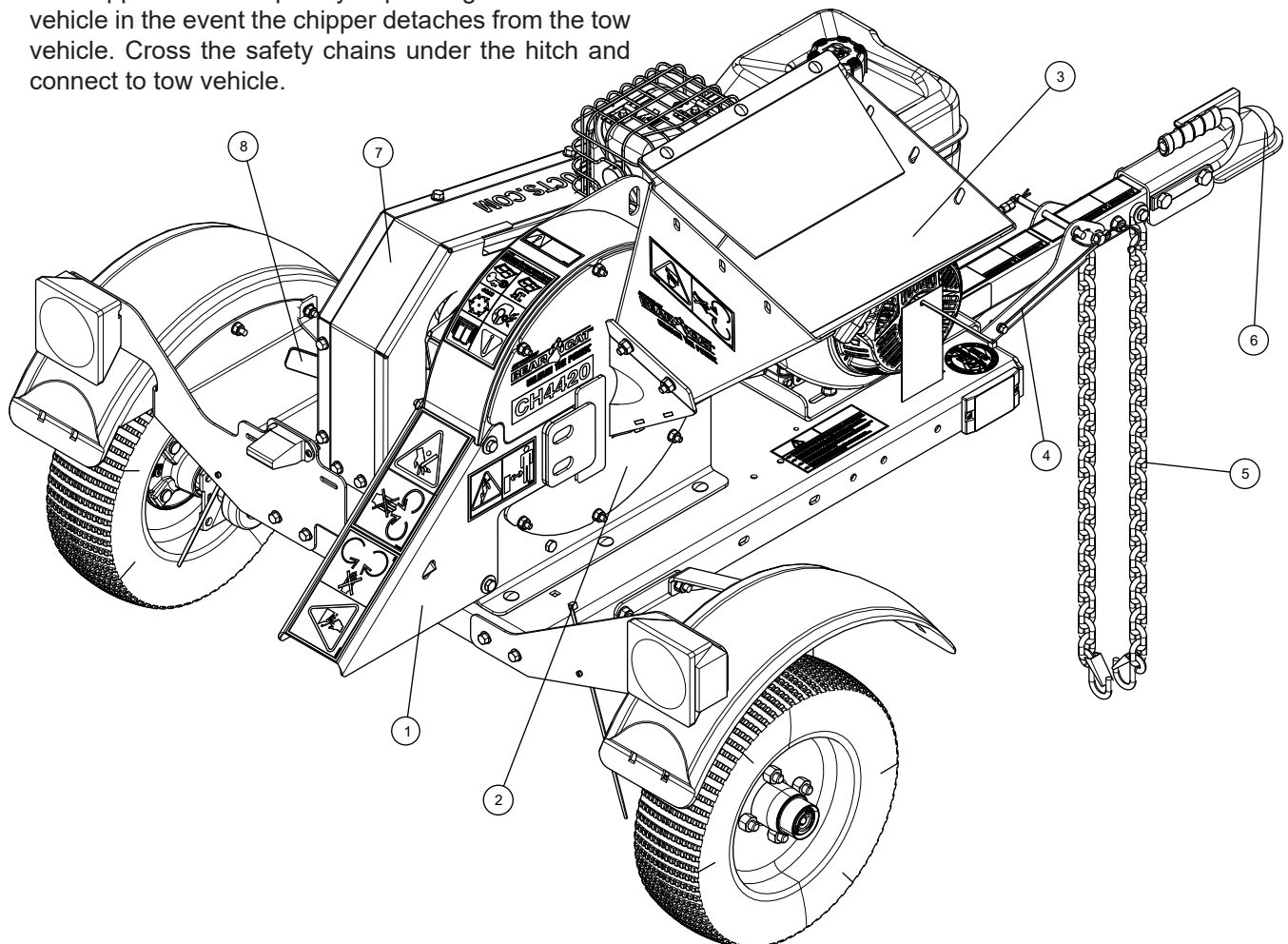
2" coupler . Always use safety chains when towing.

7. DRIVE BELT SHIELD

Never remove shields when in use.

8. 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.



4

Section OPERATION

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. Pull the recoil starter until the engine starts. Make sure the starting cord retracts.
 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.**
2. **ALWAYS** run engine at full operating speed before starting to chip material.
3. **If the chipper rotor slows**, stop feeding material. Allow the rotor to process backed up material. Feed material more evenly.
4. **If the chipper jams**, remove the branch and 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.
5. **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.
6. **Limbs fed in to the chipper chute must be 4" (10.2 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.
7. **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.
8. **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.
9. **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.
10. **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.

11. **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.

12. **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 TOWING

1.1.1 ATTACHING

1. CE compliant models only. Raise the extension tray to an upright position before towing the machine. Secure with the spring-loaded latch located near the top of the tray.
2. Open the coupler latch.
3. Align the coupler over the hitch ball and lower the trailer hitch until the coupler fully engages the hitch ball.
4. Close the coupler latch securing the coupler to the hitch ball.
5. Install the hitch pin through the coupler latch.
6. Cross the safety chains under the hitch and connect to towing vehicle.
7. Connect the wire harness to the tow vehicle.
8. Rotate jack stand 90 degrees. Secure in the UP position using pin provided.

1.1.2 DETACHING

1. Unhook the safety chains from the towing vehicle. Latch safety chains to the hitch to prevent them from interfering with chipping.
2. Disconnect the wire harness from tow vehicle.
3. Remove the hitch pin from the coupler latch.
4. Unlatch the coupler. Disconnect the hitch coupler from the hitch ball. Rotate jack stand 90 degrees. Raise chipper to clear hitch ball.
5. Move the hitch of the chipper away from the hitch ball.

NOTE

Optimum towing performance can be achieved by maintaining a horizontal trailer hitch.

5 Section SERVICE & MAINTENANCE

5.1 SERVICE & 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 YEAR
Air cleaner	Check and clean (1)	•					
Air intake	Clean (1)	•					
Engine oil	Change (1)	•					
Fuel filter	Replace	•					
Spark plug	Check condition and gap	•					
Engine oil	Check/fill		•				
Fuel tank	Check/fill		•				
All internal and external nuts and bolts	Check tightness		•				
Tire pressure	Check		•				
Chipper anvil	Check clearance and re-torque to 17 ft-lbs. (2)			•			
Chipper blades	Check sharpness and re-torque to 120 ft-lbs. (2)			•			
Entire machine	Clean			•			
Spark arrestor*	Clean			•			
Drive belt	Check				•		
Belt tension	Check				•		
Belt/pulley alignment	Check				•		
Grease zerks	Lube					•	
Wheel bearings	Check and repack						•
(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 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.

When working on the rotor assembly, use the lock mechanism at all times (Figure 5.1). Follow the steps below to install the rotor lock:

1. Remove the chipper deflector.
2. Rotate the chipper rotor until the hole on the chipper paddle is aligned with the hole on the chipper housing (Figure 5.1).
3. Install a punch or screwdriver into the holes.

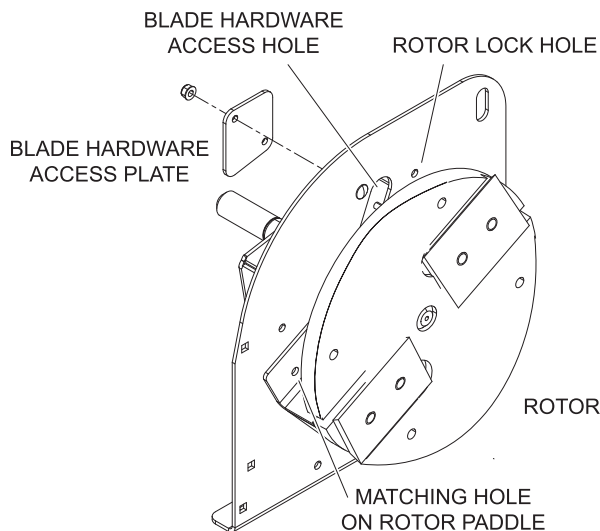


Figure 5.1, Rotor Lock

5.3 CHIPPER BLADES MAINTENANCE

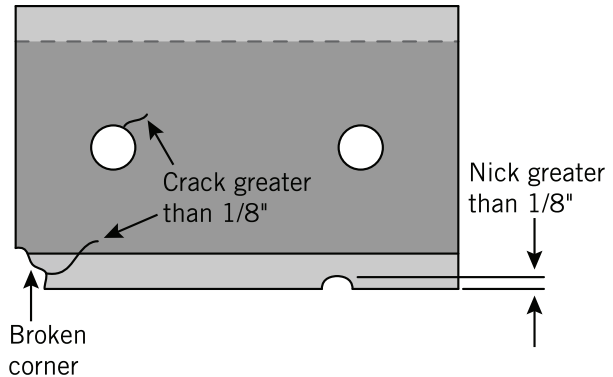
The chipper blades will eventually become dull, making chipping difficult and adding extra strain on the machine. **CHECK THE SHARPNESS OF THE BLADES EVERY 5-15 HOURS OF OPERATION AND SHARPEN AS NEEDED.**

Your blades need to be sharpened if:

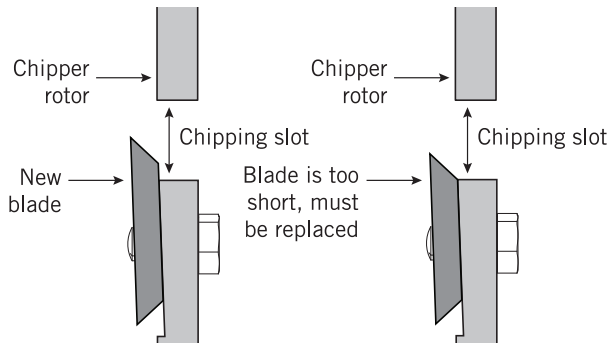
- Machine vibrates severely when material is fed into the chipper.
- Chips discharge unevenly or have stringy tails, especially when chipping green branches.

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).

**5.4 REMOVING THE BLADES****WARNING**

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

1. Remove the chipper deflector from the chipper housing by removing the two 3/8" × 5-1/2" bolts securing the discharge cap or optional discharge tube to the chipper housing. Remove the discharge cap or optional discharge tube.
2. Install the rotor lock (Section 5.2). The rotor is now restrained for removing the blades. To access the remaining blade, remove the punch or screwdriver, reposition the rotor and return the punch or screwdriver to the rotor lock hole.



WARNING



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

- Using blade hardware access hole, remove the two bolts that hold the blade to the rotor. The hardware can be reused. Repeat for remaining blade. The blades have two edges and can be reversed one time before sharpening.

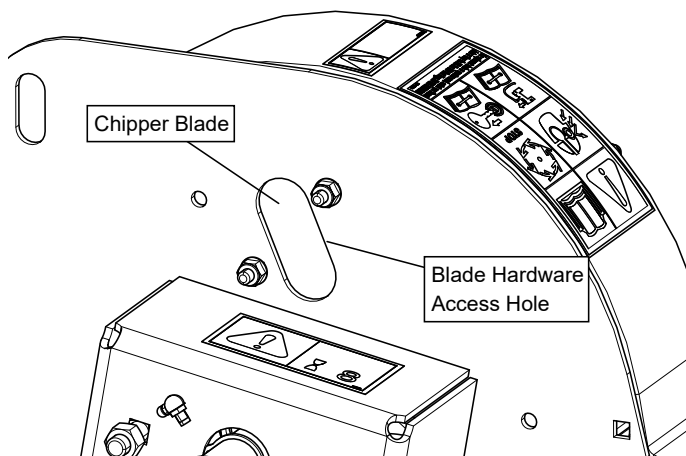


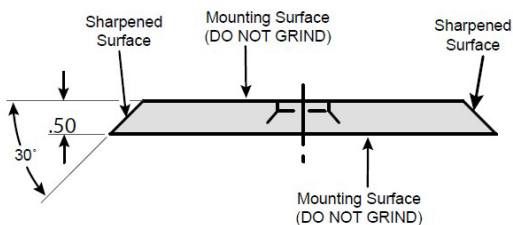
Figure 5.2, Blade Hardware Access Hole

- Inspect blades to see if cracks or nicks are visible. If cracks are present, replace the blades. Replace the blade if nicks cannot be removed by sharpening.

5.5 SHARPENING THE BLADES

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

- 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.
- Reground the angled edge of the chopping blades to 30 degrees. Use the blade angle gauge plate when sharpening the blades to achieve the proper angle (see Figure 5.3).



- Be careful when grinding so that the blade does not become overheated and change color. This will remove the heat-treated properties.
- Use short grinding times and cool with water or some type of liquid coolant.

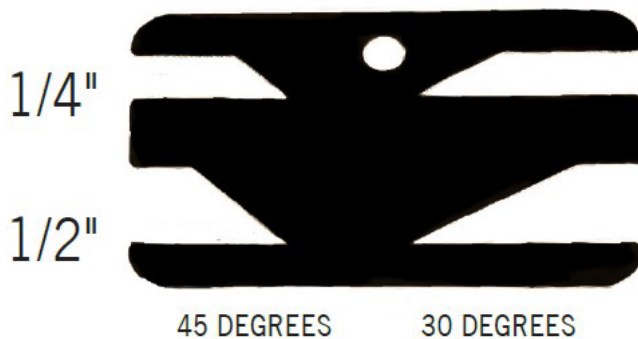


Figure 5.3 Blade Angle Gauge Plate

- Remove an equal amount off each blade to maintain rotor balance.
- Small imperfections such as nicks and burrs on the flat side of the blade will not affect the chipping performance of the machine.
- 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).

5.6 INSTALLING THE BLADES

- Lock rotor assembly (Section 5.2).
- 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. Install blade hardware access plate (see Figure 5.2).
- Reinstall the chipper discharge cap or optional discharge tube (Section 2.2).

5.7 SETTING CHIPPER BLADE CLEARANCE

The chipping blades should clear the chipping anvil, located directly under the chipper chute, by 1/16" to 1/8". Removing the chipper chute is **NOT** required for setting the chipping blade clearance. However, removing the chipper chute can provide better access for measuring the chipping blade clearance.

To adjust the blade clearance, proceed as follows:

- Rotate the rotor until a chipping blade is even with the chipping anvil.

**WARNING**

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

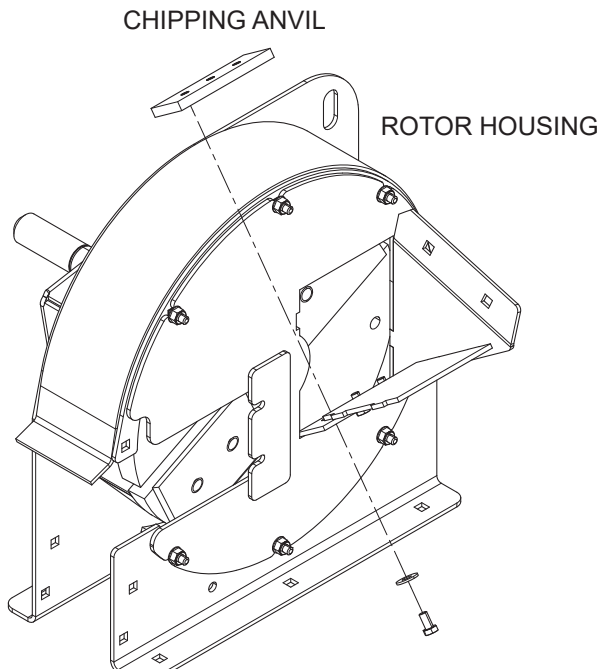


Figure 5.5, Chipping Anvil Location

2. Measure the amount of clearance between the chipping blade and chipper anvil from inside of the chipper housing. The minimum distance between the chipping blade and the chipping anvil should be 1/16" (Figure 5.6).
3. Adjust the anvil by loosening the 5/16" x 5/8" bolts holding the anvil to the rotor cover and sliding the anvil inward or outward until the desired measurement is achieved.

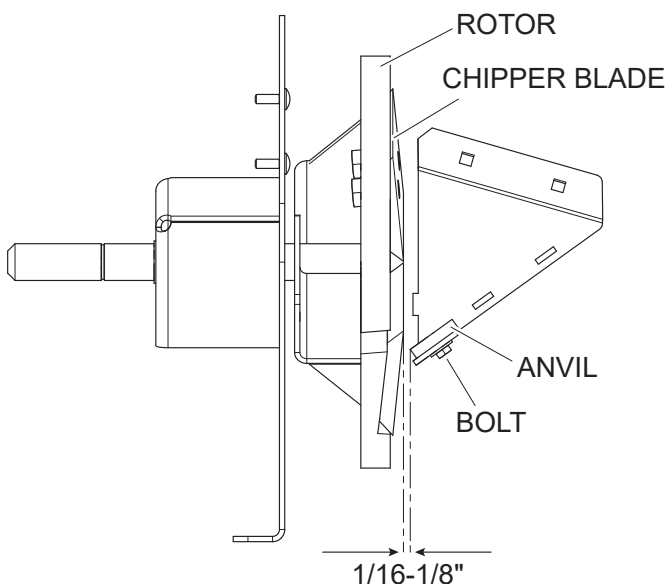


Figure 5.6, Chipper Blade/Anvil Clearance

4. Torque the bolts to 17 ft-lbs.
5. Rotate the rotor to ensure the remaining blade clears the anvil by 1/16" to 1/8" (not to exceed 1/8").
6. If the chipper chute was removed, reinstall it.

**WARNING**

If the chipping anvil edge is damaged or worn unevenly, remove the three 5/16" bolts and washers holding the anvil to the rotor cover and use one of the other three edges. Adjust for correct measurement.

**WARNING**

It is important to ensure that the minimum gap between the chipping anvil and **ALL** chipping blades is 1/16". All chipping blades should be rotated until even with the chipping anvil and then measured. Failure to do so can result in the chipping blades striking the chipping anvil, causing serious injury or death.

5.8 TRAILER MAINTENANCE TIPS

1. Check wheel bolt torque monthly.
2. Check air pressure in tires monthly.
3. Check and repack wheel bearings with grease every 12 months.
4. When towing, always connect the safety chains. Make sure trailer hitch bolts are tight.
5. Check trailer lights periodically.

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.

1. Remove the chipper deflector and/or rotor cover. Remove debris, taking care to avoid the chipper blades which can be extremely sharp.
2. Once debris is removed, replace the chipper deflector and/or rotor cover.

**WARNING**

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

5.10 DRIVE BELTS**5.10.1 DRIVE BELT ADJUSTMENT**

Check the condition of the drive belt annually or after every 25 hours of operation, whichever comes first. If the belt is cracked, frayed, worn or stretched, replace it.

1. Place the chipper engagement lever in the START position (see Figure 5.7).



Figure 5.7, Engagement Handle in START Position

2. Shut engine off.
3. Remove the seven 5/16" × 3/4" bolts securing the belt shield to the shield weldment. Remove the belt shield.
4. To increase tension on the belt, do the following:
 - a. Move the engagement lever to the CHIPPING position (see Figure 5.8).

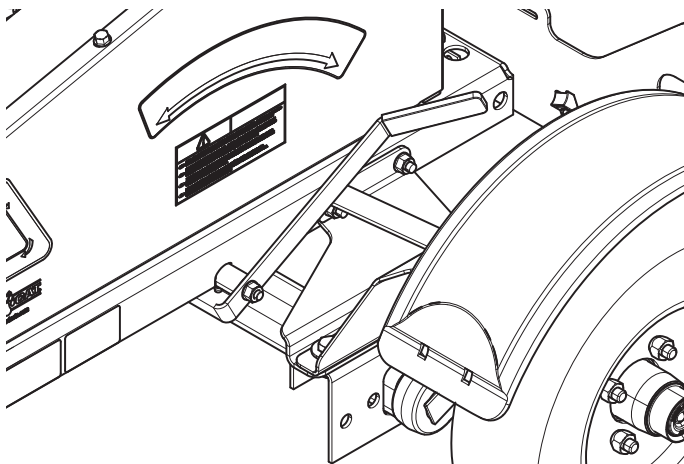


Figure 5.8, Engagement Handle in CHIPPING Position

- b. Loosen the four carriage bolts attaching the engine plate to the trailer.
- c. Locate the two 5/16" × 3" bolts and 5/16" flange nuts located on the side of the chipper between the trailer and the engine plate (see Figure 5.9).

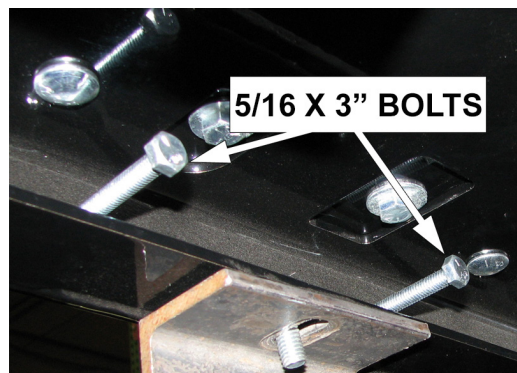


Figure 5.9, Adjustment Bolts

- d. Tighten both 5/16" bolts equally to move the engine away from the chipper housing until the belt deflection is about 7/16" when a 20 lb. load is placed against the belt (see Figure 5.9).
 - e. Tighten the four carriage bolts securing the engine plate to the trailer.
 - f. Tighten both 5/16" flange nuts to ensure the proper deflection is maintained.
5. To loosen tension on the belt, do the following:
 - a. Move the engagement lever to the CHIPPING position.
 - b. Loosen the four carriage bolts attaching the engine plate to the trailer.
 - c. Loosen both 5/16" flange nuts.
 - d. Loosen both 5/16" × 3" adjustment bolts equally and push the engine plate against the bolts. Loosen bolts until the belt deflection is about 7/16" when a 20 lb. load is placed against the belt (see Figure 5.9).
 - e. Tighten the four carriage bolts securing the engine plate to the trailer.
 - f. Tighten both 5/16" flange nuts to ensure the proper deflection is maintained.
 6. If the bolts and nuts between the engine plate and the trailer cannot be adjusted any further, and the tension needs further adjustment, tighten the eyebolt until the appropriate deflection is achieved.
 7. Replace the belt if no adjustment is left (Section 5.10.2).
 8. Reinstall the belt shield.

**WARNING**

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

5.10.2 DRIVE BELT REPLACEMENT

1. Shut the engine off.
2. Place the chipper engagement lever in the START position (see Figure 5.7).
3. Remove the belt guard by removing the 5/16" bolts.
4. Remove 3/8" × 5" bolt and the idler pulley.
5. Place the chipper engagement lever in the CHIPPING position (see Figure 5.8).
6. Loosen the four carriage bolts attaching the engine plate to the trailer.
7. Locate the two 5/16" × 3" bolts and 5/16" nuts located on the side of the chipper between the trailer and the engine plate.
8. Loosen both 5/16" flange nuts.
9. To release the tension on the belt, loosen both 5/16" × 3" bolts equally and slide the engine towards the chipper housing.
10. Remove the old belt and install the new belt. Loosen the belt guide if needed.
11. Adjust the drive belt.
12. Place the chipper engagement lever in the START position (see Figure 5.7).
13. Reinstall 3/8" × 5" bolt and the idler pulley.
14. Place the chipper engagement lever in the CHIPPING position (see Figure 5.8).
15. Position the belt guide 1/8" over the belt and tighten bolts.
16. Reinstall the belt guard.

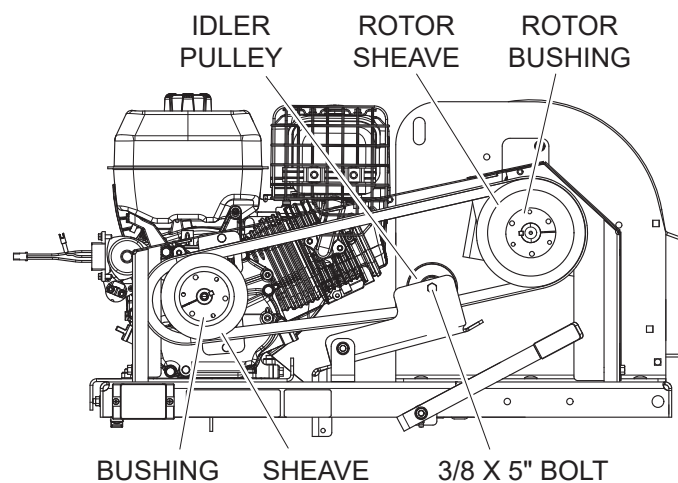


Figure 5.10, Drive Belt Replacement

5.11 ROTOR BEARINGS**5.11.1 REMOVING**

1. Place the chipper engagement lever in the START position (see Figure 5.7).
2. Shut engine off.
3. Remove the belt guard by removing the 5/16" bolts.
4. Remove the idler pulley.
5. Place the engagement lever in the CHIPPING position (see Figure 5.8)
6. Remove the belt.
7. To remove the rotor sheave, do the following:
 - a. Remove the three bolts securing the rotor sheave to the rotor shaft.
 - b. Reinstall the bolts into the second set of holes. Gradually tighten bolts equally to push the sheave off the rotor shaft.
8. To remove the front bearing, do the following:
 - a. Remove the snap ring.
 - b. Loosen the setscrews securing the front bearing to the rotor shaft.
 - c. Remove the two 1/2" × 1-1/2" carriage bolts and 1/2" centerlock nuts holding the front bearing to the chipper housing.
 - d. Slide the front bearing off the rotor shaft.
 - e. Remove the second snap ring.
9. To remove the rear bearing do the following:
 - a. Remove the seven 5/16" nylock nuts and washers securing the rotor cover to the chipper housing. Remove the rotor cover.
 - b. Loosen the set screws securing the back bearing to the rotor shaft.
 - c. Remove the two 1/2" × 1-1/2" bolts and 1/2" centerlock nuts holding the back bearing to the chipper housing.
 - d. Slide the chipper rotor out from the chipper housing until the bearing slides off the rotor shaft.

NOTE

Removal of the rear bearing is dependent upon removal of the front bearing.

**WARNING**

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

5.11.2 INSTALLING

1. Replace bearing and center in the bearing opening.
2. Tighten the two 1/2" × 1-1/2" carriage bolts and 1/2" centerlock nuts securing the rear bearing to the chipper housing. Torque to 75 ft-lb.
3. Slide the rotor back into the chipper housing.
4. Slide a snap ring onto the rotor shaft, making sure that it is seated properly on the rotor.
5. Slide the bearing shim, front bearing and second snap ring on the rotor, making sure that the second snap ring is seated properly on the rotor.
6. Reinstall the rotor cover using seven 5/16" nuts and washers.
7. Next, the rotor must be centered vertically and horizontally inside the chipper housing. To do this, measure the distance from the rotor to the inside edge of the chipper housing at four points around the rotor. Adjust the rotor until all four points are an equal distance from the edge of the chipper housing or use Alignment Tool. Finish tightening the 1/2" × 3/4" bolts and nuts securing the front bearing to the chipper housing to a torque of 75 ft-lbs.
8. Tighten the two set screws located on both the front and rear bearings, securing the bearings to the rotor shaft. Torque set screws to 160 in-lbs.
9. Slide the bushing and sheave onto the shaft.
10. Tighten the two 1/2" × 3/4" bolts and nuts securing the front bearing to the chipper housing. Torque to 75 ft-lbs.
11. Using a straight edge, align the sheave with the other pulley to ±1/16". Keep in mind that the sheave will shift approximately 1/16" to 1/8" away from you once it is tightened (see Figure 5.11).
12. Insure the pulley drive key is completely seated under the pulley and tighten the set screw.
13. Remove the three screws in the sheave and put them in the other three threaded holes on the sheave. Tighten the screws equally until the bushing tightens. Torque to 108 inch-lbs.
14. Recheck pulley alignment. Pulley faces should line up. If not, readjust and repeat alignment check (see Figure 5.11).
15. Replace the belt.
16. Adjust the drive belt so that the belt deflection is 7/16" when a 20 lb. load is placed against the belt (see Figure 5.9). To do this, adjust both 5/16" adjustment bolts equally.

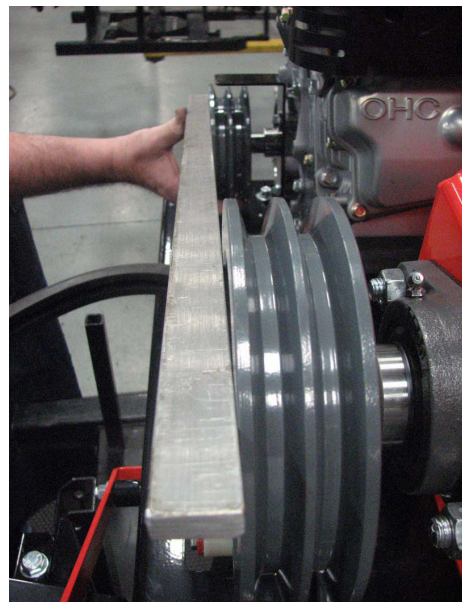


Figure 5.11, Checking Pulley Alignment

17. If the bolts and nuts between the engine plate and the trailer cannot be adjusted any further, and the tension needs further adjustment, tighten the eyebolt until the appropriate deflection is achieved.
18. Once correct belt deflection has been achieved, tighten both 5/16" flange nuts to maintain it.
19. Tighten the four carriage bolts attaching the engine plate to the trailer.
20. Reinstall the belt guide.
21. The chipper engagement lever should be in the START position (up).
22. Reinstall the idler assembly.
23. Attach the chipper chute to the rotor cover.
24. Attach the discharge cap.
25. Replace the belt guards.

5.12 CHANGE OIL

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



WARNING



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

5.13 LUBRICATION



WARNING



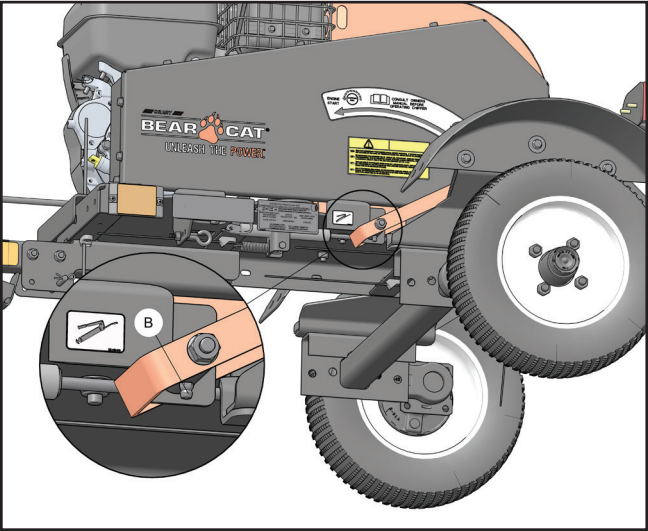
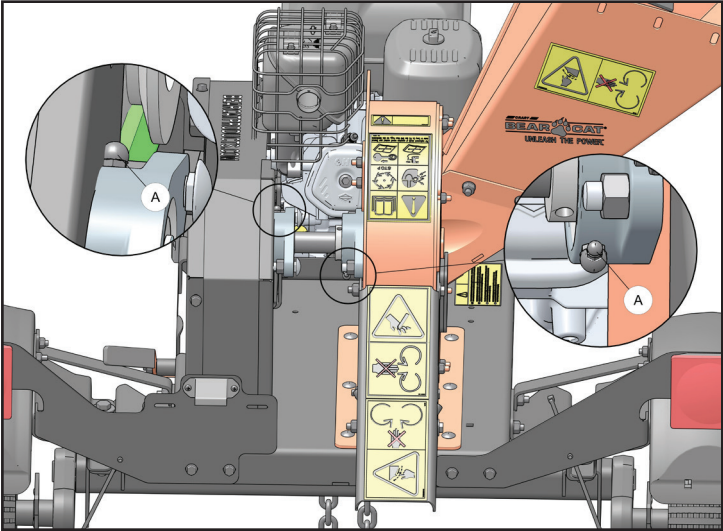
Polyurea and lithium-based greases are not compatible. Mixing the two grease types may lead to premature failure.

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
Number of Zerks		2 Rotor Assy Bearings (A) 1 Engagement Lever (B)	
	As Needed		



Picture Note: Some parts removed for better view.

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

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
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.
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
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

*If equipped

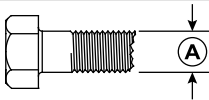
PROBLEM	POSSIBLE CAUSES	REMEDY
Cannot engage belt	Improper belt installation, belt not under belt guide	Install belt properly, install belt under belt guide
	Improper belt tension	Adjust belt tension, Replace belt or belt tension spring if needed
Excessive belt wear	Not using correct belt	Contact your 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
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
Trailer sways during towing	Discharge tube and/or extension tray not in correct towing position.	Before towing the machine, position and lock the discharge tube to face the opposite direction of the towing vehicle and raise the extension tray.
	Tire air pressure is not correct.	Check tire sidewall for inflation limits.

7 Section SPECIFICATIONS

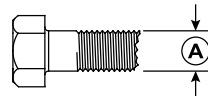
DESCRIPTION	ENGLISH	METRIC
Overall size (L × W × H)	75" × 51" × 44"	191 cm × 130 cm × 112 cm
Overall weight	465 lbs.	211 kg
Max chipper cap	4"	10.2 cm
Chipper blades	2 reversible (5" × 4" × 0.5")	2 reversible (12.7 cm × 10.2 cm × 1.3 cm)
Rotor speed	3000 RPM	
Rotor size	14" diameter × 1"	36 cm diameter × 2.5 cm
Rotor weight	49 lbs.	22.2 kg
Chipping anvil	5" × 1.75" × 0.375"	12.7 cm × 4.4 cm × 0.95 cm
Discharge size	4.5" × 9" (standard) 4" × 4.5" (optional)	11.4 cm × 22.9 cm (standard) 10.2 cm × 11.4 cm (optional)
Drive type	Double-banded belt	
Drive belt size	2RB61	
Tire size	ST4.80-8	
Engine	420cc Briggs & Stratton®	
Fuel tank capacity	1.74 gallon	6.6 liters

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%.

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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

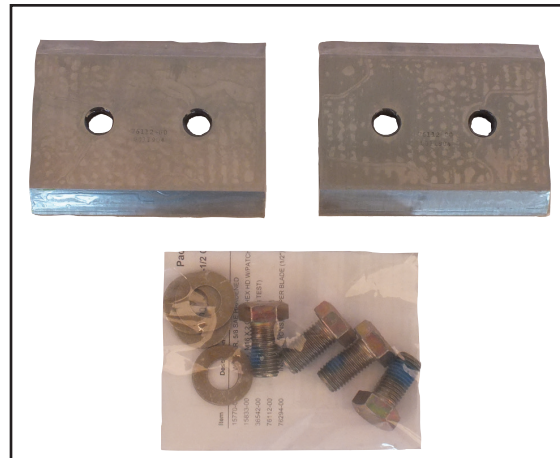
Only genuine Crary Bear Cat replacement parts should be used to repair the machine. Replacement parts manufactured by others could present safety hazards, even though they may fit on this machine. Replacement parts are available from your Crary Bear Cat dealer.

Provide the following when ordering parts:

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

8.2 OPTIONS

PART NUMBER	DESCRIPTION
31605-00	METER, TACH/HOUR
74634-00	KIT, 4-1/2 CHIPPER DISCHARGE
78360-00	KIT, 4-1/2 CHIPPER BLADE (1/2")
78941-00	KIT, SPARE TIRE



Chipper Blade Kit, 78360-00



Spare Tire Kit, 78941-00



Optional Discharge, 74634-00

