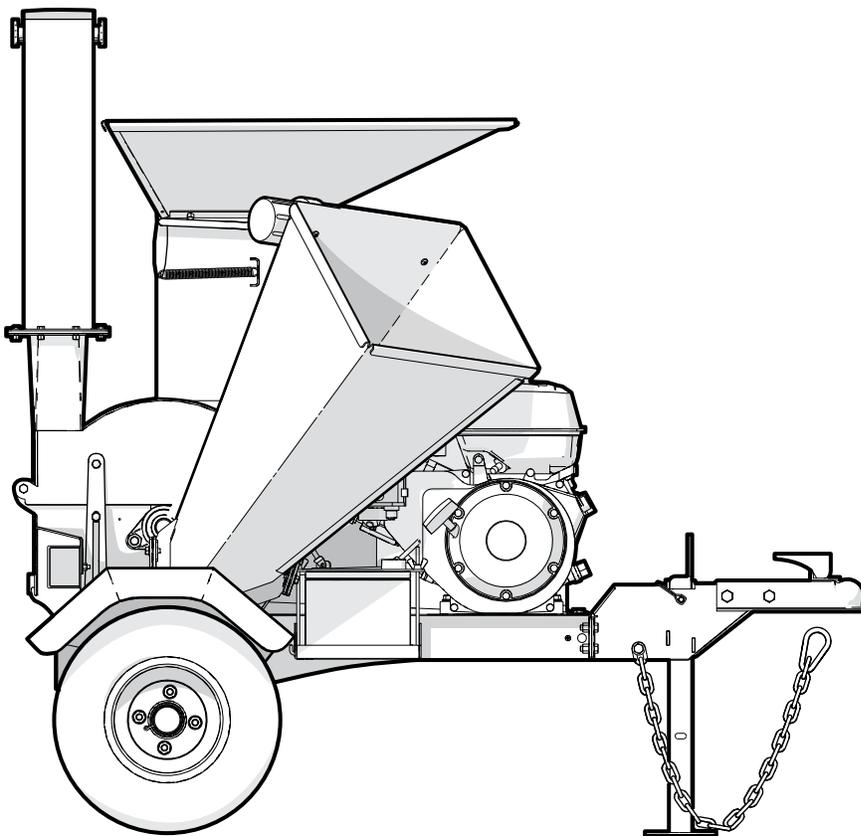


OPERATOR'S MANUAL

Serial numbers up to 2E9US111XMS040745.

BXMT3213 **TRAILER CHIPPER-SHREDDER**



1. Foreword

1.1 Introduction

Congratulations on your choice of a **Wallenstein BXMT3213 Trailer Chipper-Shredder!**

The BXMT Chipper-Shredders are strong, rugged machines that can provide consistent chipping and shredding of materials.

Safe, efficient and trouble-free operation of this Wallenstein product requires that anyone using or maintaining the machine reads and understands the Safety, Operation, Maintenance information contained within the Operator's Manual.

Keep this manual handy for frequent reference and to pass on to new operators or owners. Call your Wallenstein dealer or the Distributor if you need assistance, information or additional copies of the manuals.

Units of measurement in Wallenstein Equipment technical manuals are written as:
US Customary (SI metric)

Wallenstein Equipment Inc. • © 2020



WARNING!

Do not attempt to start or operate the machine without thoroughly reviewing this manual for safe and proper operation.

Always keep this manual with the machine.

W034



www.wallensteinequipment.com

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1.2 Delivery Inspection Report

Wallenstein BXMT Series Trailer Chipper-Shredder

To activate warranty, register your product at: www.wallensteinequipment.com

This form must be filled out by the dealer at the time of delivery, then signed by the dealer and customer.

The product manuals have been received by me and I have been thoroughly instructed as to care, adjustments, safe operation, and applicable warranty policy.

I have thoroughly instructed the buyer on the equipment care, adjustments, safe operation and applicable warranty policy and reviewed the manuals.

Customer

Dealer

Address

Address

City, State/Province, ZIP/Postal Code

City, State/Province, ZIP/Postal Code

()

()

Phone Number

Phone Number

Contact Name

Model

Serial Number

Delivery date

1.2.1 Dealer Inspection

- Check Blade Clearance and Rotor Turns Freely
- Check cutting blades, twig breaker, chop block
- Discharge and Deflector Move Freely
- All Fasteners are Tight
- Spring-Loaded Shredder Gate Moves Freely
- Machine Lubricated
- Check Engine Oil Level
- Check Pressure in Tires
- Belt Tension Checked

Safety Checks

- All Safety Decals Installed
- Guards and Shields Installed and Secured
- Retainer Installed Through Hitch Points
- Operating and Safety Instructions Reviewed

1.3 Serial Number Location

Always provide the model and serial number of your Wallenstein product when ordering parts or requesting service or other information. The product information plate location is shown in the illustration.

Record your product Serial Number in the space provided below for future reference.

Record Product Information Here	
Model:	BXMT3213
Serial Number:	

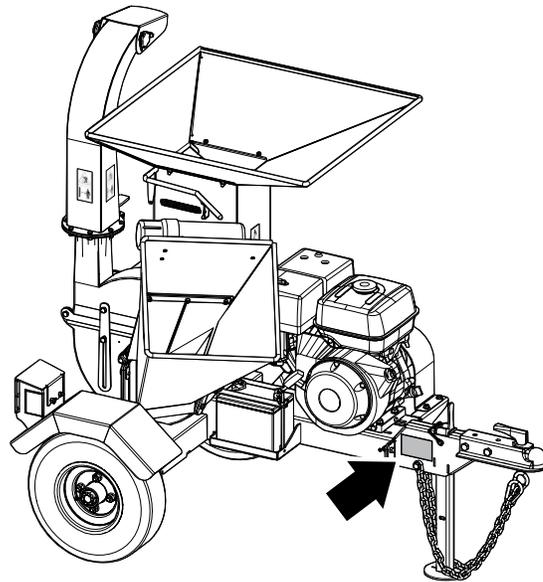


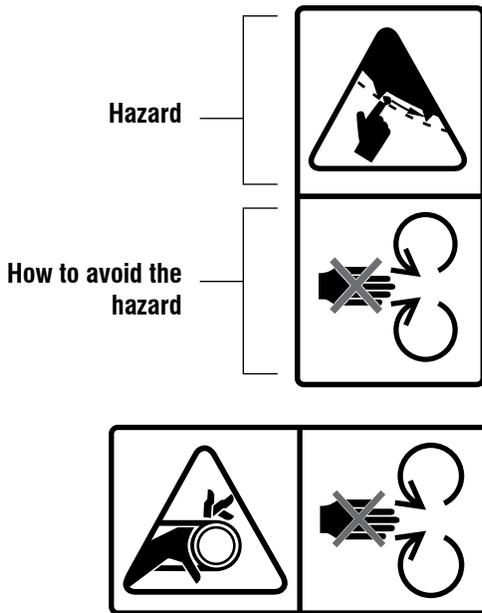
Fig. 1 – Serial Number Plate Location

1.4 Types of Decals on the Machine

When getting familiar with the Wallenstein product, notice that there are numerous decals located on the machine. There are different types of decals for safety, information, and product identification. The following section explains what they are for and how to read them.

Safety Decals have a yellow background and are generally two panel. They can be either vertical or horizontal.

The top (or left-hand) panel shows the safety alert (the potential hazard), and the bottom (or right-hand) panel shows the message (how to avoid the hazard).



Safety Notice Decals are blue with a white background and generally rectangular with single or multiple symbols. This decal informs what Personal Protective Equipment is required for safe operation.



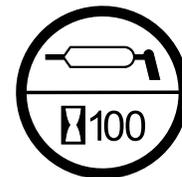
Informative Decals are generally pictorial with a white background and can vary in the number of panels. This type of decal provides additional information to the operator or explains the operation of a control.



Product Decals indicate machine model and serial number, and other important information.



Maintenance Decals have a green background and can vary to the number of panels. This decal shows a type maintenance required and frequency interval.



See the section on safety signs for safety decal definitions. For a complete illustration of decals and decal locations, download the parts manual for your model product at www.wallensteinequipment.com.

2. Safety

2.1 Safety Alert Symbol

This Safety Alert Symbol means:

**ATTENTION! BE ALERT!
YOUR SAFETY IS INVOLVED!**

The Safety Alert Symbol identifies important safety messages on the Wallenstein Chipper-Shredder and in the manual.

When you see this symbol, be alert to the possibility of personal injury or death. Follow the instructions in the safety message.



2.2 Signal Words

The signal words **DANGER**, **WARNING** and **CAUTION** determine the seriousness level of the warning messages in this manual. The appropriate signal word for each message in this manual has been selected using the following guidelines:

DANGER –

Indicates an imminently hazardous situation that, if not avoided, **will** result in death or serious injury. This signal word is to be limited to the most extreme situations typically for machine components which, for functional purposes, cannot be guarded.

WARNING –

Indicates a potentially hazardous situation that, if not avoided, **could** result in death or serious injury, and includes hazards that are exposed when guards are removed. It may also be used to alert against unsafe practices.

CAUTION –

Indicates a potentially hazardous situation that, if not avoided, **may** result in minor or moderate injury. It may also be used to alert against unsafe practices.

IMPORTANT – To avoid confusing equipment protection with personal safety messages, a signal word **IMPORTANT** indicates a situation that if not avoided, could result in damage to the machine.

2.3 Why Safety is Important

Three Big Reasons:

- **Accidents Disable and Kill**
- **Accidents Cost**
- **Accidents Can Be Avoided**

YOU are responsible for the SAFE operation and maintenance of your Wallenstein product. **YOU** must make sure that anyone who is going to use, maintain or work around the machine is familiar with the operating and maintenance procedures and related **SAFETY** information contained in this manual. This manual alerts you to all good safety practices that should be used while using your Wallenstein equipment.

YOU are the key to safety. Good safety practices not only protect you but also the people around you. Make these practices a working part of your safety program. Be certain that **EVERYONE** using this equipment is familiar with the recommended operating and maintenance procedures and follows all the safety precautions.

Do not risk injury or death by ignoring good safety practices.

2.4 Safety Rules

- Provide operating instructions to all employees before allowing them to operate the machine.



- Read and understand ALL Safety and Operating instructions in the manual and follow them. The most important safety device on this equipment is a SAFE operator.

- Review safety related items annually with all personnel who will be operating or performing maintenance.
- Wear appropriate Personal Protective Equipment (PPE) when using this machine. This includes but is not limited to:
 - A hard hat
 - Heavy gloves
 - Hearing Protection
 - Protective shoes with slip resistant soles
 - Protective glasses, goggles or face shield

- Keep a first-aid kit available for use should the need arise and know how to use it.



- Inspect and secure all guards before starting.
- Keep a fire extinguisher available for use should the need arise and know how to use it.



- Never expect a person who has not read or understands all operation and safety instructions to operate the machine. An untrained operator is not qualified and exposes everyone to possible serious injury or death. It is the owner's responsibility to the operator to ensure familiarity and understanding of the machine.
- The operator must be a responsible, properly trained and physically able person familiar with machinery and trained in this equipment's operations. If the elderly are assisting with work, their physical limitations need to be recognized and accommodated.
- DO NOT risk injury or death by ignoring good safety practices. **Think SAFETY! Work SAFELY!**

2.5 Equipment Safety Guidelines

Operating machines safely is one of the main concerns in designing and developing Wallenstein equipment. However, accidents could occur that can be avoided by a few seconds of thought and a more careful approach to handling equipment.

- Keep all shields in place. If shield removal becomes necessary for repairs, replace the shield prior to use. In some cases, certain illustrations in this manual may show an assembly with a safety shield removed for clarity. However, equipment should never be used in this condition.
- Replace any safety sign or instruction sign that is not readable or is missing. Location and explanation of safety signs start on *page 14*.

- Never consume alcoholic beverages or drugs while using this equipment. These can hinder alertness or coordination. Consult your doctor about using this machine while taking prescription medications.
- Do not modify the equipment in any way. Unauthorized modification may result in serious injury or death and may impair the function and life of the equipment. Unapproved modifications void warranty.
- Never exceed the limits of a piece of machinery. If its ability to do a job, or to do so safely is in question – **DO NOT TRY IT.**

2.6 Safe Condition

Throughout this manual, we talk about a '*Safe Condition*'. What this means is setting the machine in a state that makes it safe to service or repair.

Place the machine in a Safe Condition before performing any service, maintenance work or storage preparation by performing the following:



SAFE CONDITION

- Shut off engine.
- Make sure all moving parts have stopped.
- Block or chock wheels.

2.7 Safety Training

- Train all new personnel and review instructions frequently with existing workers. Be certain only a properly trained and physically able person will use the machinery. A person who has not read and understood all instructions is not qualified to use the machine. An untrained operator can cause possible serious injury or death.
- If this machine is used by any other person, loaned or rented, it is the owner's responsibility to make certain that prior to using, every operator:
 - knows the meaning of all safety decals
 - reads and understands the owner's manual
 - is instructed in safe and proper use of the equipment
 - understands and knows how to perform the Safe Condition procedure

2.8 Being Prepared

- Never use the machine until the operators have been adequately trained in the safe operation of the machine and have read and completely understand:
 - safety, operation and feature sections of this manual
 - the safety signs on the machine.
 - engine operator's manual
 - how to place the machine in a safe condition
- PPE is recommended during assembly, installation, operation, adjustment, maintenance, repair, removal, cleaning, and transport. Do not allow long hair, loose fitting clothing or jewelry around equipment.
- Prolonged exposure to loud noise may cause permanent hearing loss! Power equipment with or without equipment attached can often be noisy enough to cause permanent, partial hearing loss.
- Always wear hearing protection if the noise in any area you work in exceeds 80 dB.
 - Noise over 85 dB on a long-term basis can cause severe hearing loss.
 - Exposure to noise over 90 dB over a long-term basis may cause permanent, total hearing loss.
 - Hearing loss from loud noise (from engines, chain saws, radios, and other such sources close to the ear) is cumulative over a lifetime, without hope of natural recovery.
- Clear working area of stones, branches or hidden obstacles that might be hooked or snagged, causing injury or damage.
- Determine where chips will be piled and ensure it does not interfere with safe operation of the machine
- Use this machine only in daylight or good artificial light.
- Be sure machine is properly adjusted and in good operating condition.
- Perform the **Pre-operation Checklist** procedure before starting work (see *Pre-Operation Checklist on page 26*).



2.9 Refueling Safety

- Handle fuel with care. It is highly flammable.
- Allow engine to cool for 5 minutes before refueling. Clean up spilled fuel before restarting engine.
- Do not refuel the machine while smoking or fuel up near open flame or sparks.
- Fill fuel tank outdoors.
- Prevent fires by keeping machine clean of accumulated trash, grease and debris.
- Be sure to stop the engine prior to refueling.
- Do not overfill the fuel tank.
- If fuel is spilled, wipe it away carefully and wait until the fuel has dried before starting the engine.
- After refueling, make sure that the fuel cap is secured to prevent spillage.



2.10 Tire Safety

- Failure to follow proper procedures when mounting a tire on a wheel or rim can produce an explosion which may result in serious injury or death.
- Do not attempt to mount a tire unless you have the proper equipment and experience to do the job.
- Have a qualified tire dealer or repair service perform required tire maintenance.
- When replacing worn tires, make sure they meet the original tire specifications. Never undersize.

2.11 Battery Safety



Risk of burns! Battery electrolyte is extremely corrosive and poisonous. Contact with the eyes, skin, or clothing can result in severe burns or other serious personal injury. If contact occurs seek medical attention immediately. Handle batteries carefully.

W020

- Wear gloves and safety glasses or face shield when working on or near batteries.
- Use a battery carrier to lift the battery or place hands at opposite corners to avoid spilling acid through the vents.
- Avoid contact with battery electrolyte:

- **External Contact:** Flush immediately with water.
- **Eye Contact:** Flush with water for 15 minutes. Get prompt medical attention. Clean up any spilled electrolyte immediately.

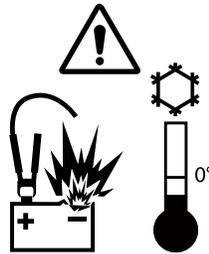
- Avoid contact with battery posts, terminals and related accessories, they contain lead and lead compound chemicals known to cause harm if ingested. Wash hands immediately after handling battery.
- Keep all sparks and flames away from batteries. Electrolyte fumes are explosive.
- To avoid injury from spark or short circuit, disconnect battery ground cable before servicing any part of the electrical system.

 **CAUTION!**

Risk of explosion or fire! Do not let metal objects come in contact with the battery terminals. Arcing can cause a fire or explosion. Cover terminals if working near batteries.

W021

- Do not jump start or charge a frozen battery. Frozen batteries can explode and result in death or serious injury. Let battery thaw before charging.



2.12 Gas Engine Safety

 **CAUTION!**

Before starting engine, review the operating and maintenance instructions in the engine manual.

W019

- **DO NOT** operate engine in an enclosed area. Exhaust gases contain carbon monoxide, which is an odorless and deadly gas.
- **DO NOT** place hands or feet near moving or rotating parts.
- **DO NOT** store, spill, or use gasoline near an open flame, or devices such as a stove, furnace, or water heater which use a pilot light or devices which can create a spark.
- **DO NOT** refuel indoors where area is not well ventilated. Outdoor refueling is preferred.
- **DO NOT** refuel while engine is running. Allow engine to cool for 5 minutes before refueling. Store fuel in approved safety containers.
- **DO NOT** remove fuel tank cap while engine is running.
- **DO NOT** operate engine if gasoline is spilled. Move machine away from the spill and avoid creating any ignition until gasoline has evaporated.
- **DO NOT** smoke while filling fuel tank.
- **DO NOT** choke carburetor to stop engine. Whenever possible, gradually reduce engine speed before stopping.
- **DO NOT** run engine above rated speeds. This may result in injury.
- **DO NOT** tamper with governor springs, governor links or other parts which may increase the governed speed.
- **DO NOT** tamper with the engine speed selected by the original equipment manufacturer.
- **DO NOT** check for spark with spark plug or spark plug wire removed.
- **DO NOT** crank engine with spark plug removed. If engine is flooded, crank until engine starts.
- **DO NOT** strike flywheel with a hard object or metal tool as this may cause flywheel to shatter in operation. Use proper tools to service engine.
- **DO NOT** operate engine without a muffler. Inspect periodically and replace, if necessary. If engine is equipped with a muffler deflector, inspect periodically. Replace if necessary, with correct deflector.
- **DO NOT** operate engine with an accumulation of grass, leaves, dirt or other combustible materials in the muffler area.

- **DO NOT** use this engine on any forest covered, brush covered, or grass covered unimproved land unless a spark arrester is installed on the muffler. The arrester must be maintained in effective working order by the operator. In the state of California, the above is required by law (Section 4442 of the California Public Resources Code). Other states may have similar laws. Federal laws apply on federal land.
- **DO NOT** touch hot muffler, cylinder or fins because contact may cause burns.
- **DO NOT** run engine with air cleaner or air cleaner cover removed.

Be sure to:

- Remove the wire from the spark plug when servicing the engine or equipment to prevent accidental starting. Disconnect the negative wire from the battery terminal if equipped with a 12-volt starting system.
- Keep cylinder fins and governor parts free of grass and other debris which can affect engine speed.
- Examine muffler periodically to be sure it is functioning effectively. A worn or leaking muffler should be repaired or replaced as necessary.
- Use fresh gasoline. Stale fuel can gum carburetor and cause leakage.
- Check fuel lines and fittings frequently for cracks or leaks. Replace if necessary.

3. Safety Signs

3.1 Safety Sign Locations

The types of safety signs and locations on the equipment are shown in the illustrations that follow. Good safety requires that you familiarize yourself with the various safety signs, the type of warning and the area, or function related to that area, that requires your SAFETY AWARENESS.

Safety sign explanations begin on *page 14*.

IMPORTANT! If safety signs have been damaged, removed, become illegible or parts replaced without safety signs, new signs must be applied.

New safety signs are available from your authorized dealer.

Think SAFETY! Work SAFELY!

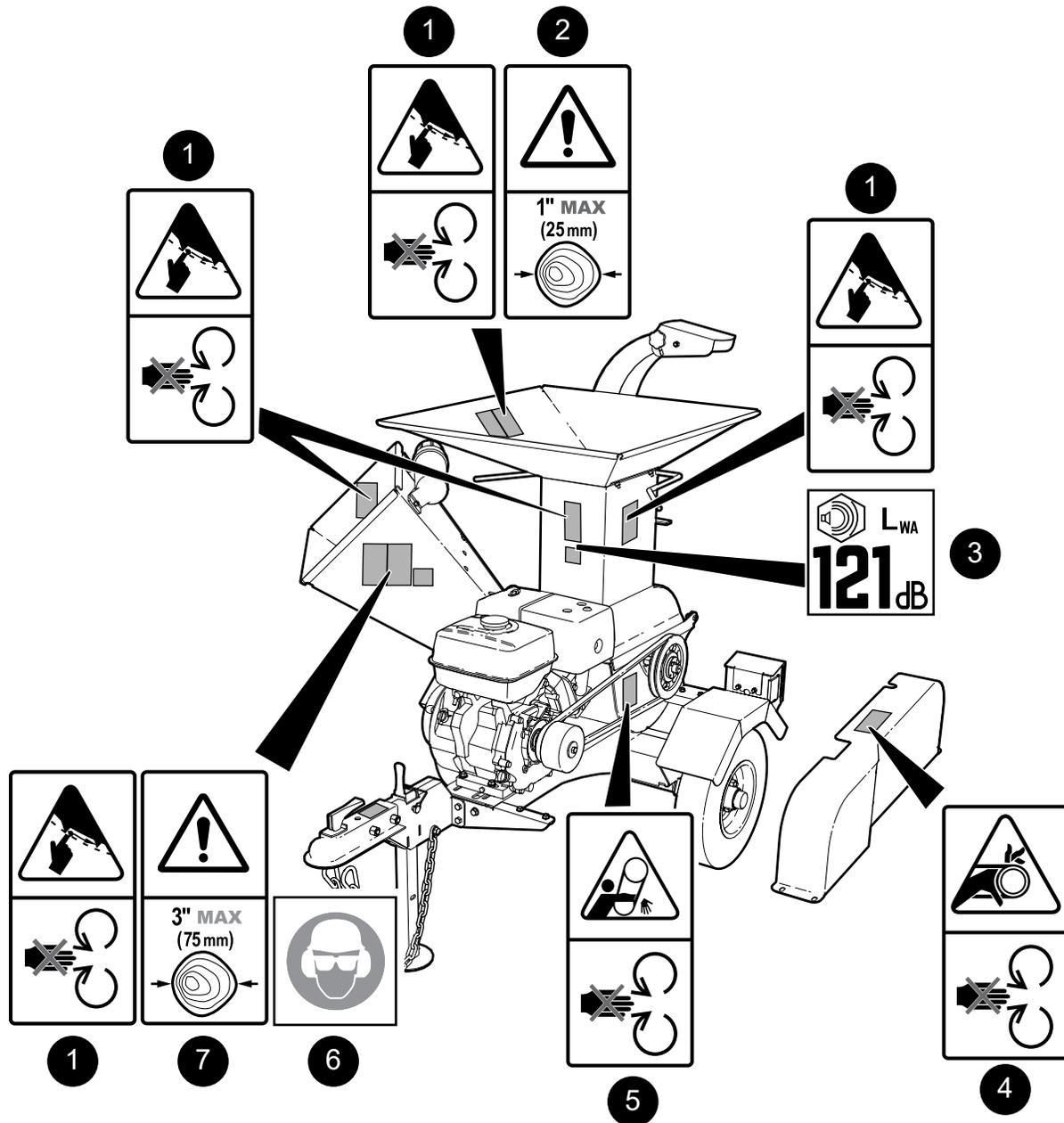
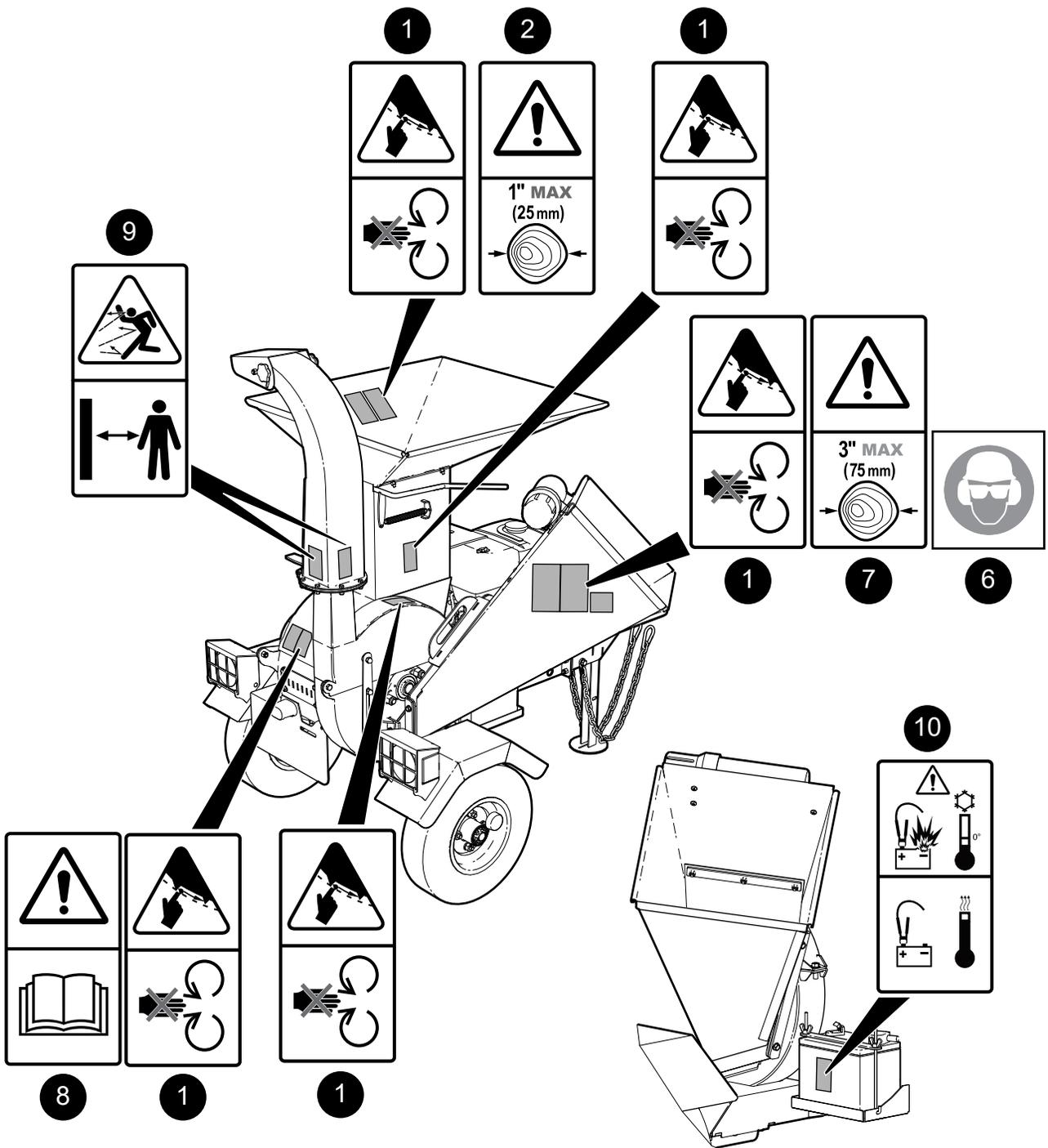


Fig. 2 – BXMT3213 Safety Decals

Safety



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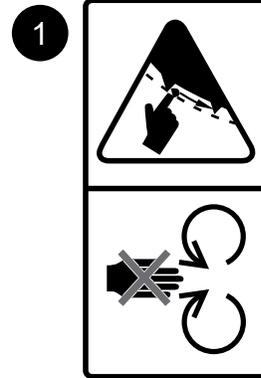
Fig. 3 – BXMT3213 Safety Decals

3.2 Safety Sign Explanations

Inlet and Discharge Openings

WARNING! Risk of fingers being severed or serious injury to hands in this area!

Keep hands and feet out of inlet and discharge openings while machine is operating.



Shredder Material Size

CAUTION! Risk of personal injury!

Do not overload the shredder by placing material into the feed hopper larger than the size stated on the decal, for example 1" (25 mm) in diameter.

Machine damage could also result.



Noise Levels when Machine is Operating

The noise declaration decal indicates the sound power (LWA) emitted by the machine when operating. For this chipper, it can be up to 121 decibels at close distances.

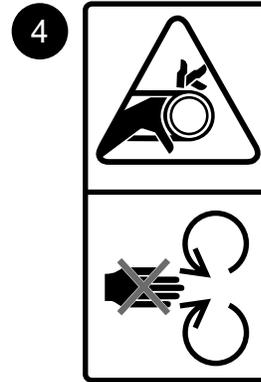
Noise exposure over 85 dB on a long-term basis can cause severe hearing loss. Exposure over 90 dB over a long-term basis may cause permanent, total hearing loss.



Drive Belt Sheave

WARNING! Risk of serious injury if caught in drive belt!

Never operate the machine with guard cover removed. Always keep guards and covers in place when machine is in operation. Keep hands clear of this area.



Drive Belt

WARNING! Risk of serious injury if caught in drive belt!

Never operate the machine with guard cover removed. Always keep guards and covers in place when machine is in operation. Keep hands clear of this area.



Personal Protective Equipment

CAUTION! Always wear appropriate Personal Protective Equipment around this machine when it is in operation.

- A hard hat
- Hearing protection
- Protective glasses, goggles or face shield
- Protective shoes with slip resistant soles
- Heavy gloves



Feed Hopper Material Size

CAUTION! Risk of personal injury!

Do not overload the chipper by placing material into the feed hopper larger than the size stated on the decal, for example 3" (75 mm) in diameter.

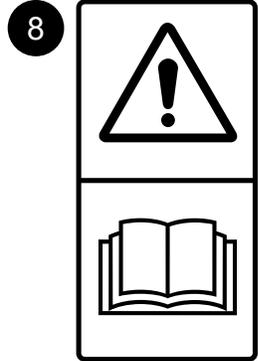
Machine damage could result.



Safety Awareness

Caution! Refer to the operator's manual. Read ALL operating instructions in the manual and learn the meaning of ALL safety signs on the machine.

The best safety feature is an informed operator!



Discharge Chute

CAUTION! Risk of injury from flying debris!

Stay clear of material discharge chute. Machine can expel wood chips fast enough to cause injury.

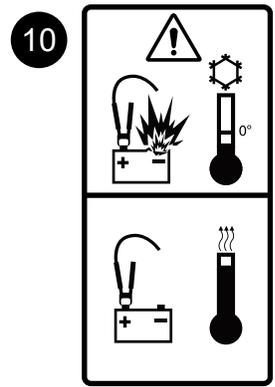
Do not point discharge at people, animals or buildings. Point chipper discharge away from work area and bystanders. Keep a safe distance from discharge.



Battery

WARNING! Risk of battery exploding!

Do not jump start or charge a frozen battery. Frozen batteries can explode and result in death or serious injury. Let battery thaw before charging.



Replacing Damaged Safety Signs

- Always replace safety signs that are missing or have become illegible. Replacement safety signs are available from your authorized distributor, dealer parts department, or the factory.
- Always keep safety signs clean and legible.
- Parts replaced that had a safety decal on them must also have the safety sign replaced.

Procedure

Installation area must be clean and dry. Make sure the surface is free of grease or oil. Ambient temperature must be above 50 °F (10 °C).

 **NOTE:** *Determine exact position before removing the backing paper on the decal.*

1. Peel the decal off the backing sheet.
2. Align the decal with an edge on the machine if possible.
3. Starting on one edge, carefully press the center of the exposed sticky backing in place, smoothing it out as you work from one side to the other.
4. Use a squeegee, credit card or similar edge to smooth it out. Work from one end of the decal to the other end.

Small air pockets can be pierced with a pin and smoothed out using the piece of sign backing paper.

4. Familiarization

It is the responsibility of the owner or operator to read this manual and to train all other operators before they start working with the machine. Follow all safety instructions. Untrained operators are not qualified to use the machine.

1. Review control location, function and movement directions.
2. Move the unit to a large open area to allow the operator to become familiar with control function and machine response. When a new operator is familiar and comfortable with the machine, they can proceed with the work.
3. Do not allow untrained operators to use the machine. They can endanger themselves and others or damage property and the machine.

IMPORTANT! Make sure all operators understand how to put the machine in a safe service position before servicing or repairing. See *page 7*.

4.1 Operator Orientation

The directions for left-hand, right-hand, backward and forward mentioned throughout this manual are determined when facing the direction of forward travel.

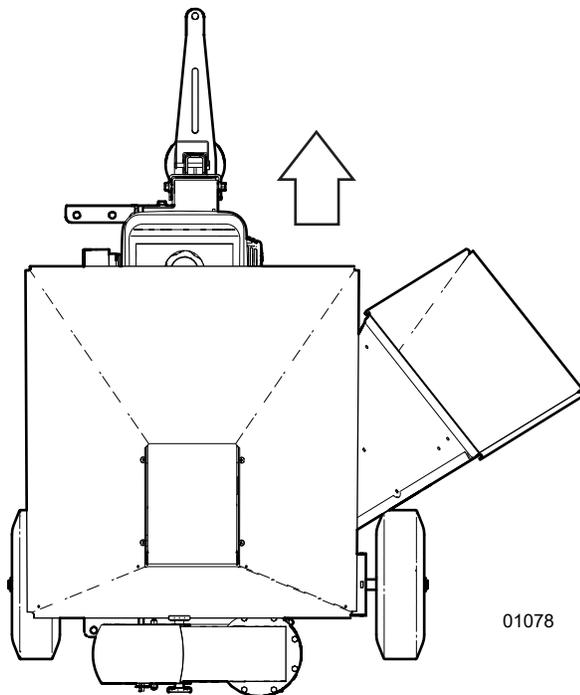
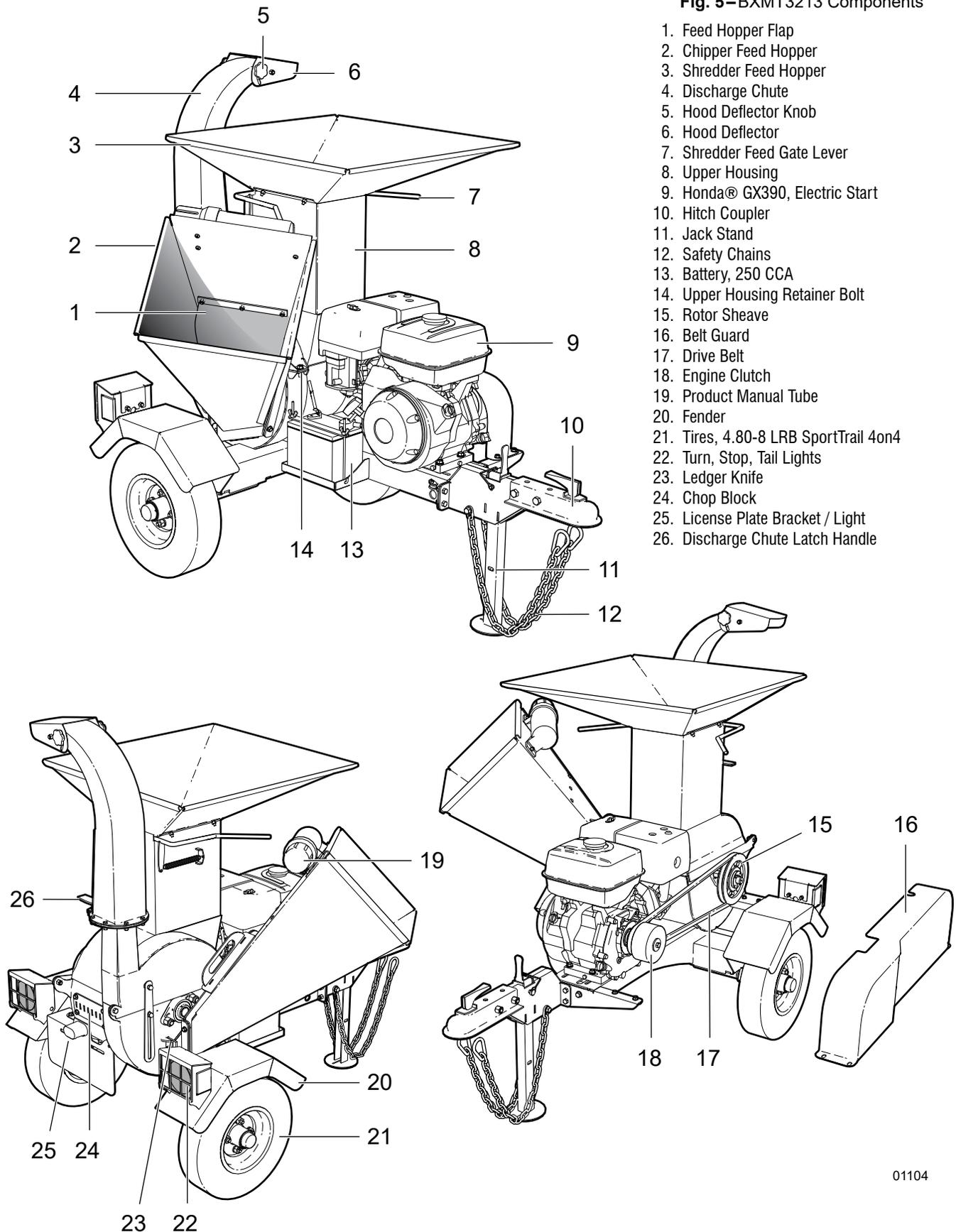


Fig. 4–Direction of forward travel

4.2 Machine Components

Fig. 5—BXMT3213 Components

1. Feed Hopper Flap
2. Chipper Feed Hopper
3. Shredder Feed Hopper
4. Discharge Chute
5. Hood Deflector Knob
6. Hood Deflector
7. Shredder Feed Gate Lever
8. Upper Housing
9. Honda® GX390, Electric Start
10. Hitch Coupler
11. Jack Stand
12. Safety Chains
13. Battery, 250 CCA
14. Upper Housing Retainer Bolt
15. Rotor Sheave
16. Belt Guard
17. Drive Belt
18. Engine Clutch
19. Product Manual Tube
20. Fender
21. Tires, 4.80-8 LRB SportTrail 4on4
22. Turn, Stop, Tail Lights
23. Ledger Knife
24. Chop Block
25. License Plate Bracket / Light
26. Discharge Chute Latch Handle



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5. Controls

Before starting to work, all operators should familiarize themselves with the location and function of all controls.

5.1 Engine

Refer to the engine manual that came with this product for further explanation on engine controls.

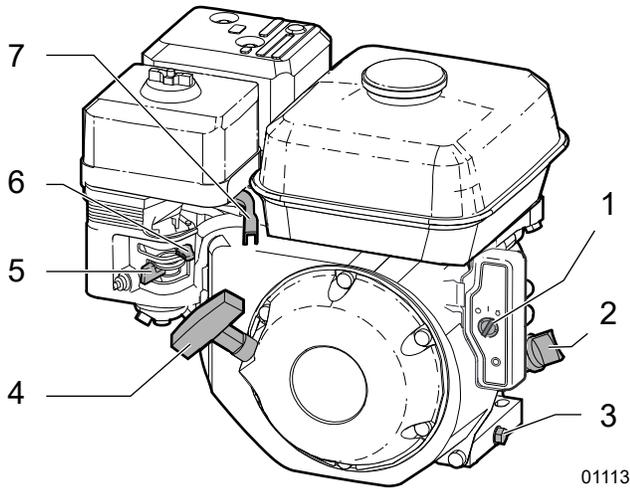


Fig. 6—Engine Controls

1. Ignition Switch
2. Oil Level Check
3. Oil Drain Plug
4. Starting Rope
5. Fuel Valve Lever
6. Choke Lever
7. Throttle Lever

Ignition Switch

The BXMT3213 ignition switch has three positions—OFF, ON, and START.

-  **OFF** – In the OFF position, there is no power to the engine. Turn the switch fully counterclockwise to shut the engine off.
-  **ON** – The engine operates in the ON position.
-  **START** – In the START position, the starter engages. When released, the switch returns to ON.

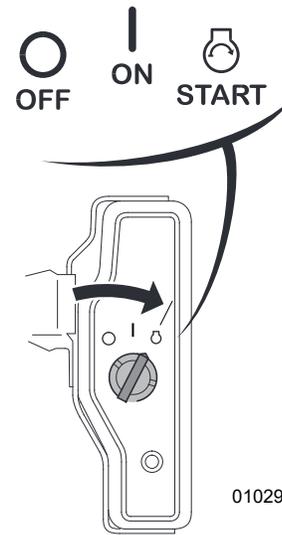


Fig. 7—BXMT3213 Ignition Switch

Choke Lever

The choke lever opens and closes the choke valve in the carburetor.

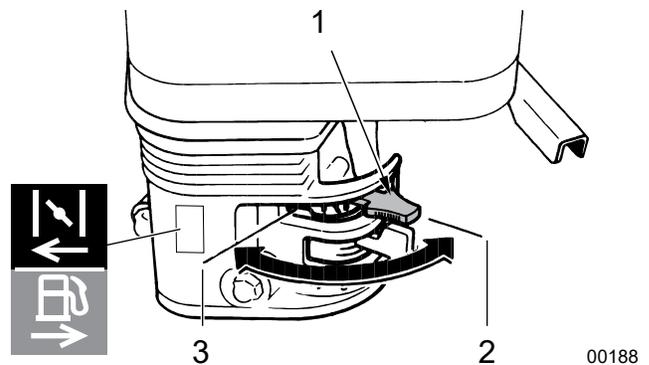


Fig. 8—Choke Lever

1. Choke Lever
 2. Choke Open Position (off)
 3. Choke Closed Position (on)
- Close the choke valve (position 3) when starting a cold engine.
 - Open the choke valve (move to position 2) after the engine starts. When restarting a warm engine, leave the choke valve open.

Fuel Shut-off Valve

The engine is equipped with a valve between the fuel tank and the carburetor.

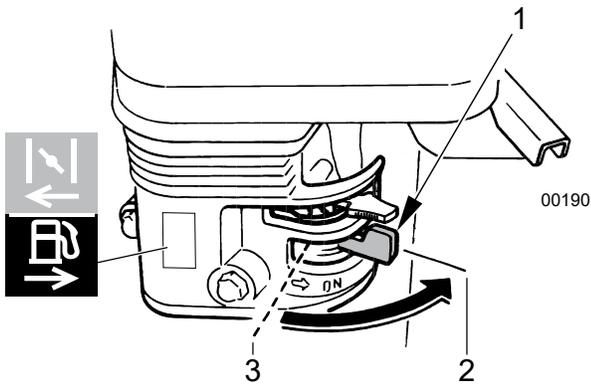


Fig. 9–Fuel Valve Lever

1. Fuel Shut-off Valve Lever
 2. ON–Fuel is supplied to the carburetor
 3. OFF–Fuel system is shut off
- Slide the fuel valve lever toward the block (2) to turn fuel ON, and away (3) to turn OFF.
 - Turn the fuel OFF when not in use or when transporting the machine.

Throttle Lever

The throttle lever controls the engine speed.

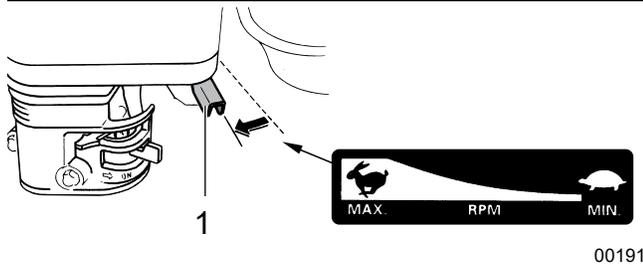


Fig. 10–Throttle Lever Positions

1. Throttle Lever
- Move the lever side to side to increase or decrease engine speed.
 - Always operate the wood chipper with the throttle lever in the MAX position.

Recoil Starter

BXMT3213 has a recoil hand starter that can be used to start the engine.

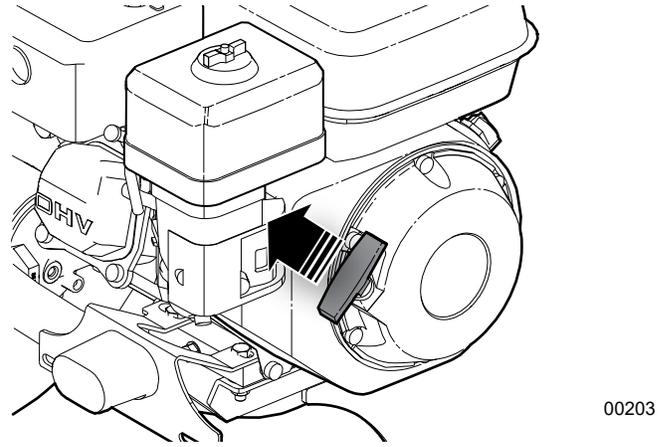


Fig. 11–Recoil Starter

- Pull the starter grip out lightly until resistance is felt, then pull briskly in the direction of the arrow as shown below. Return the starter grip gently.

5.2 Shredder Feed Gate Lever

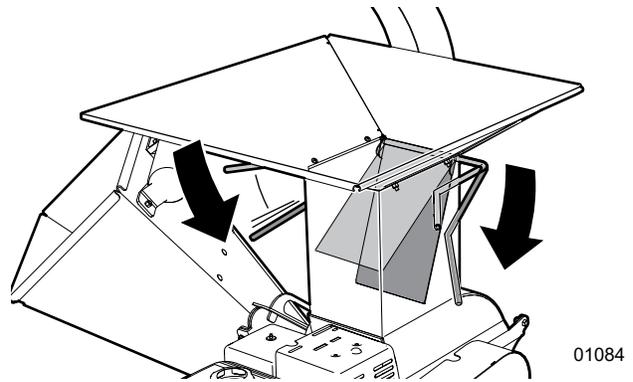


Fig. 12–Feed Gate Levers

- The shredder intake is designed with spring-loaded gates to allow the material in the hopper to move into the shredder rotor and close when unattended.
- Levers on each side of the hopper control the position of the gate. Move the lever down to allow the material to move into the shredding rotor. Release the lever and the spring will move the gate into its closed position.

5.3 Hood Deflector

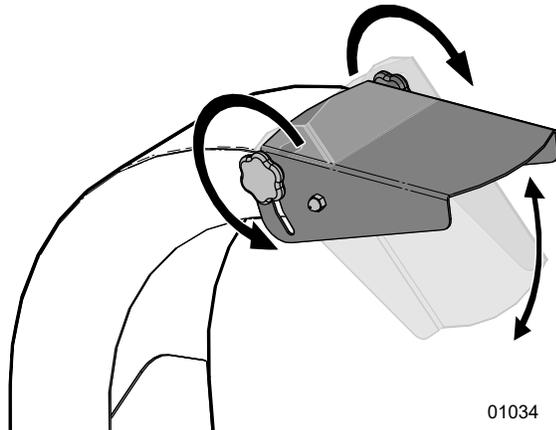


Fig. 13–Hood Deflector

- The Hood Deflector on the end of discharge chute directs the discharge of chips.
- The deflector is held in position by clamping knobs on each side. To reposition, turn the knobs counterclockwise to loosen. Reposition, then tighten the clamps.

5.4 Hitch Coupler

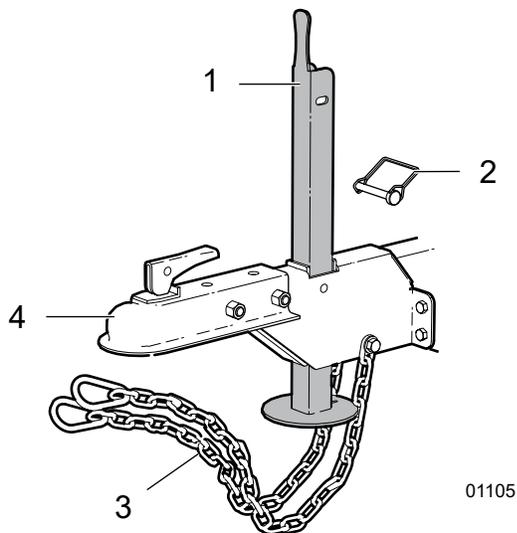


Fig. 14–Hitch Coupler

- | | |
|------------------|------------------|
| 1. Jack Stand | 3. Safety Chains |
| 2. Snap Lock Pin | 4. Hitch Coupler |

- The jack stand is used to support the front of the chipper when disconnected from the tow vehicle or in storage
- When towing the chipper, raise the jack stand leg and place the snap lock pin in the lower hole.

- Lock the hitch coupler over the ball on the tow vehicle and insert the snap lock pin.
- Cross the safety chains underneath the hitch coupler and attach them to the tow vehicle.

5.5 Discharge Chute

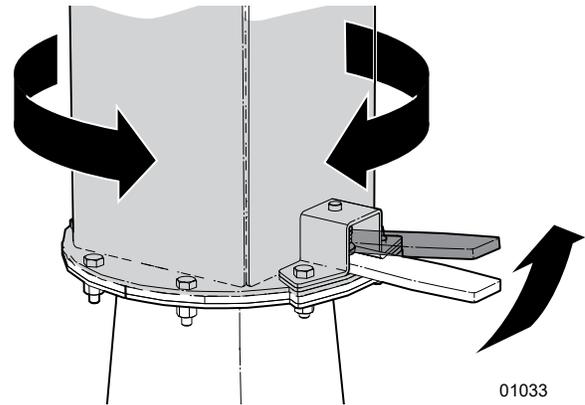


Fig. 15–Discharge Chute Rotation

- The discharge chute can rotate 360°. A spring-loaded latch handle locks it in position when released.
- Lift the latch handle up until the chute lock pin disengages, rotate the chute as required, and release the latch handle. Make sure it locks it in position at the next nearest lock point.

6. Operating Instructions

CAUTION!

Park the machine so prevailing winds blow exhaust gases / fumes away from the operator.

W006

CAUTION!

Risk of injury from ejected wood chips. Chipper rotor can expel wood chips fast enough to cause injury or damage.

Direct chute discharge away from work area, people, animals, and objects.

W024

WARNING!

Never reach into the feed hopper. Doing so risks hands getting caught. Use a stick or branch to push in any material that does not move on its own.

If jammed, stop the engine, wait for the rotor to stop, then clear the jam.

W004

CAUTION!



Hearing loss hazard. Prolonged exposure to loud noise may cause permanent hearing loss. Use suitable protection while operating the machine.

W016

The operator has the responsibility of being familiar with and following all operating and safety procedures.

Although this machine is easy to use, each operator should review this section to get familiar with the detailed safety and operating procedures.

6.1 Operating Safety

- Do not reach into rotor or feed hopper openings when the machine is running. Install and secure access covers before starting engine.
- Do not move or transport chipper when the rotor is turning.
- Keep the working area clean and free of debris to prevent tripping. Operate only on level ground.
- Do not point discharge at people, animals or buildings. Rotor can expel wood chips fast enough to cause injury.
- Be aware of the size and shape of the material being fed into the chipper. Crotchety branches can move in unpredictable ways and could cause injuries. Large curved pieces should be cut into smaller straighter sections.
- Do not work alone. It is safer to work in pairs in case an emergency arises.
- Never stand, sit or climb onto any part of the chipper while it is running.
- Place chipper in a Safe Condition before servicing, adjusting, repairing, or unplugging.
- Use care when feeding material into chipper. Do not put metal, bottles, cans, rocks, glass or other foreign material into wood chipper. If foreign material enters chipper, inspect machine for damaged or loose parts before resuming work.

CAUTION!

Do not risk injury by working in an unsafe situation. Take steps to make the machine safe to work on before performing any maintenance or service procedure.

Follow steps listed to put the machine in a Safe Condition.

W049

SAFE CONDITION

- Shut off engine.
- Make sure all moving parts have stopped.
- Disconnect battery ground (-) cable.
- Block or chock wheels.

6.2 Before Startup

1. Check the engine oil level. See *page 27*.
2. Turn fuel valve on. Check the fuel level. See *page 26*.
3. Check the engine air cleaner. See *page 37*.
4. Review Operating Safety.
5. Clear the area of bystanders.
6. Make sure each operator is trained and familiar with the set up and operation of the wood chipper.
7. Perform the Pre-operation Checklist.
8. Survey the work site and place the chipper in a clear, level work area. Park machine so that engine exhaust is not blowing towards the operator.
9. Leave the chipper attached to the tow vehicle if extra stability is required. Set park brake on tow vehicle.
10. Lower the front jack stand. Insert snap lock pin.
11. Direct discharge chute away from the operator.

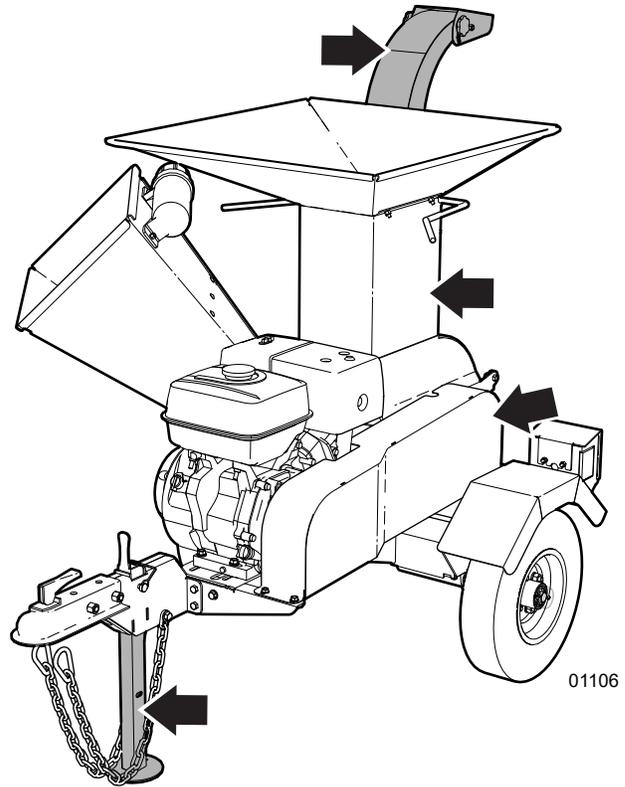


Fig. 16—Machine setup properly

- Discharge chute pointed to desired position, away from operator and bystanders.
- Upper housing securely closed.
- All guards in place.
- Jack leg supporting chipper or attached to tow vehicle.
- Chipper located in clear, level area.

6.2.1 Pre-operation Checklist

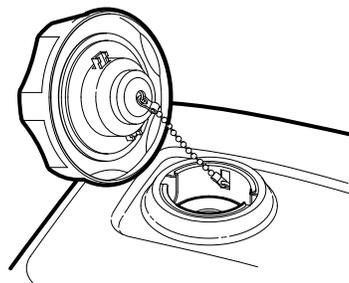
Check the following each time the wood chipper is used:

Pre-operation Checklist	✓
Check the tension and alignment of the belt. Adjust as required.	
Check the rotor housing and discharge chute. Remove any blockages, twine, wire or other material that has become entangled.	
Check the condition and clearance of the twig breaker, rotor and stationary blades. Adjust or replace as required.	
Check condition of the battery and other electrical components (if equipped). Keep all components in good condition.	
Check and ensure that all covers, guards and shields are in place, secured, and can function as designed. Check the condition of the feed hopper safety curtain.	
Check that all bearings are properly greased. Replace if they do not turn freely.	
Check and inspect tires, wheels, and hubs.	
Check and tighten all fasteners. Make sure the equipment is in good condition.	
Check that appropriate equipment for personal protection is available and being used. Check that jewelry, loose-fitting clothing are not worn. Make sure long hair is tied back.	

6.3 Fuel Level Check

Check the fuel level before each use. Starting with a full tank helps to eliminate or reduce operating interruptions for refueling.

The fuel tank is located on the engine. Avoid running the tank dry.



00198

Fig. 17–Fuel Filler Cap

6.3.1 Refueling

Fuel tank capacity: **1.61 US gal (6.1 L)**.

⚠ WARNING!



Fuel vapors can explode causing injury or death. Do not smoke while refueling. Keep sparks, flames, and hot components away.

W027

Refuel in a well-ventilated area with the engine stopped. If the engine has been running, allow it to cool first. Never refuel the engine inside a building where gasoline fumes can come in contact with flames or sparks.

This engine is certified to operate on unleaded gasoline with a pump octane rating of 86 or higher (a research octane rating of 91 or higher).

Refer to the engine manual for additional information on fuels.

1. Clean the area around fuel tank cap. Fill the tank to 1/2" (12 mm) below bottom of filler neck to provide space for any fuel expansion. **Do not overfill!**
2. Install fuel fill cap securely and wipe up any spilled fuel.

6.4 Engine Oil Level Check

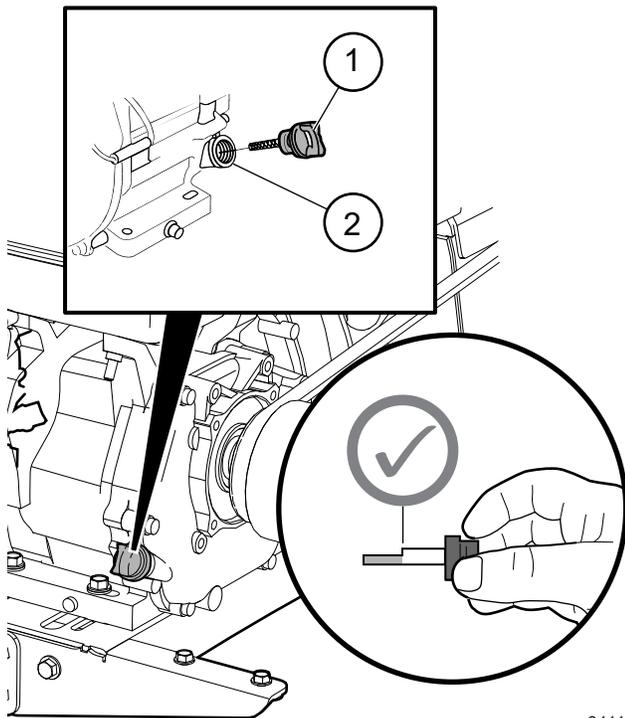
Check engine oil level before each use.

Check with the machine parked on level ground and the engine stopped.

IMPORTANT! Running the engine with a low oil level can cause engine damage that is not covered by warranty.

IMPORTANT! Refer to the engine owner's manual included in the manual tube for further information on engine oils.

1. Remove the oil level dipstick and wipe it clean.
2. Fully insert the oil level dipstick, then remove it to check the oil level. **The proper level is when the oil is visible at the full (upper) mark on the dipstick.**
3. If the oil level is low, add oil until the level is at the full mark. **SAE 10W-30 is recommended for general use.**
4. Reinstall the oil level dipstick.



01114

Fig. 18–Engine Oil Level check

1. Oil Level Dipstick
2. Oil Filler

6.5 Starting the Engine

WARNING!

Engine exhaust contains carbon monoxide, an odorless, poisonous gas. Breathing it can cause unconsciousness or death.

Never operate this engine in a closed, or even partly closed area. Exhaust gases can build up to dangerous levels.

W072

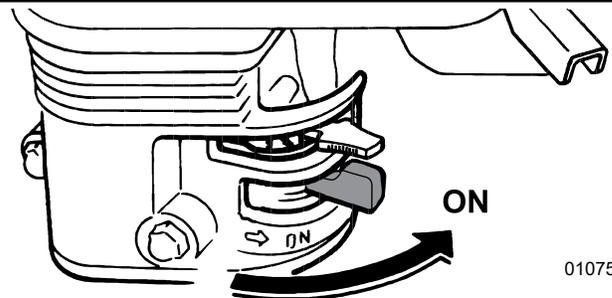
CAUTION!

Before starting engine, review the operating and maintenance instructions in the engine manual.

W019

Make sure the chipper is set up to work and otherwise ready to run.

1. Slide the fuel valve lever toward the block to turn fuel ON.



01075

Fig. 19–Fuel valve Lever

2. If the engine is cold, close the choke (push choke lever to the left). To start a warm engine, leave the choke open (lever pushed to the right).

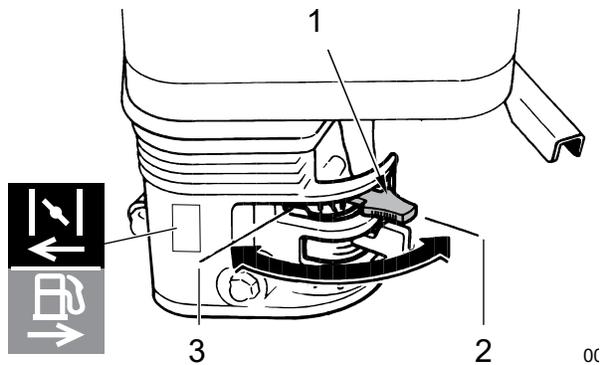


Fig. 20—Choke Lever

1. Choke Lever
2. Choke OPEN—warm engine
3. Choke CLOSED—cold engine

3. Move the throttle lever away from the MIN. position, about 1/3 of the way toward the MAX position.

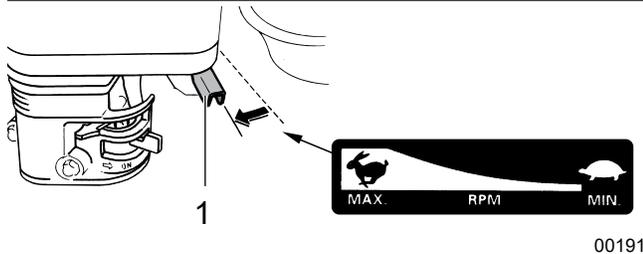


Fig. 21—Engine Throttle

1. Throttle Lever

4. Turn the key to the START position, and hold it there until the engine starts. If the engine fails to start within 5 seconds, release the key, and wait at least 10 seconds before making another attempt.

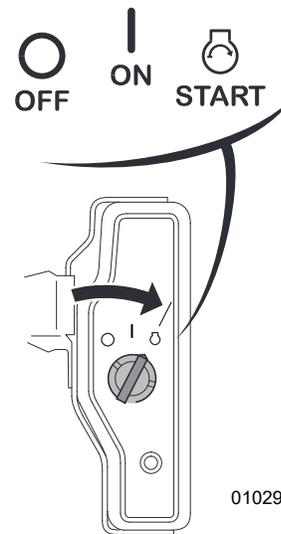


Fig. 22—Ignition Switch

IMPORTANT! Using the electric starter for more than 5 seconds at a time can overheat the starter motor and damage it.

5. When the engine starts, release the key, allowing it to return to the ON position.
6. If the choke lever was moved to the CLOSED position to start the engine, gradually move it to the OPEN position as the engine warms.
7. Leave the engine operating at low throttle for a few minutes to allow it to warm up. Gradually push the choke control lever open (to the left) as the engine warms.

IMPORTANT! Engine should be warmed up before putting to work.

8. Once the engine is warmed, increase the throttle setting to MAX to increase the rotor to full speed before beginning.

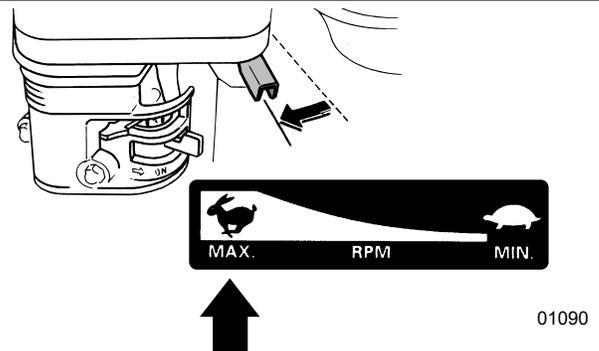


Fig. 23—Move throttle setting to MAX

6.6 Stopping the Engine

To stop the engine in an emergency, turn the ignition switch OFF. Correct fault situation before restarting.

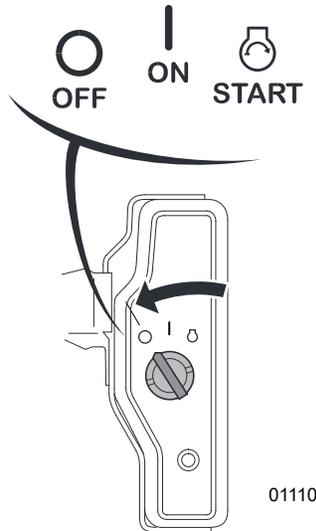


Fig. 24—Ignition Switch

Under normal conditions, use the following procedure

1. Stop loading material into the chipper.
2. Decrease engine speed to MIN.
3. Turn the ignition switch OFF.
4. Turn the fuel valve OFF.

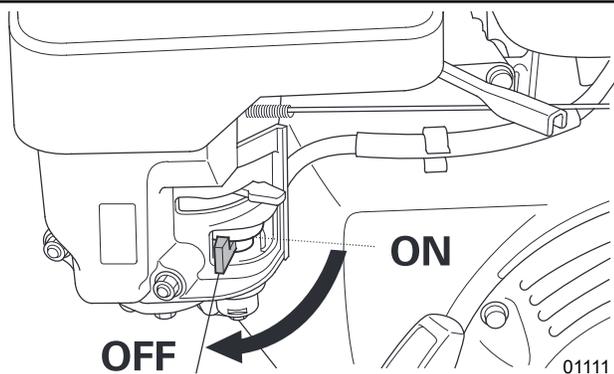


Fig. 25—Fuel Valve

6.7 Chipping Operation

⚠ WARNING!

Never reach into the feed hopper. Doing so risks hands getting caught. Use a stick or branch to push in any material that does not move on its own.

If jammed, stop the engine, wait for the rotor to stop, then clear the jam.

W004

⚠ CAUTION!

Risk of personal injury! Do not overload the machine by placing material into the feed hopper larger than the size stated on the decal.

Machine damage could also result.

W063

Maximum Material Diameter for BXMT3213

Chipper	Shredder
3" (7.5 cm)	1" (2.5 cm)

1. Before putting material into the chipper, make sure the engine is warmed and the rotor is up to speed.
2. Slowly slide material into the chipper feed hopper. Do not force the material as it is drawn in as it engages the rotor. Use continuous, light pressure to guide it in.
3. Be aware of how much material you feed in. Slow down or stop if the engine begins to slow.

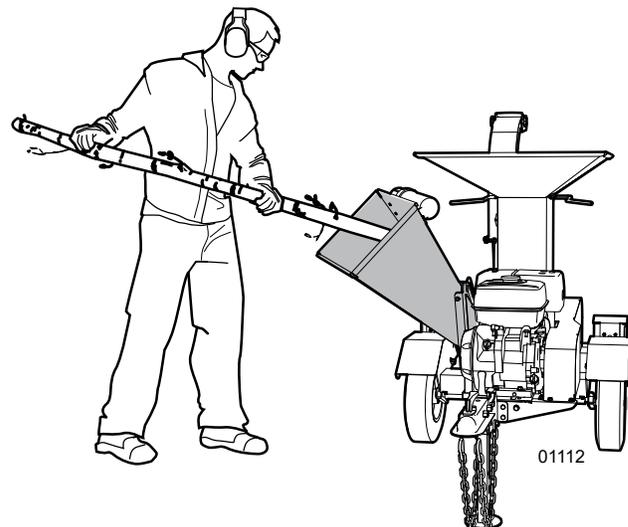
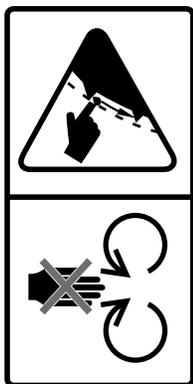


Fig. 26—Chipper Operation



4. Use a stick or branch to push any piece of material into the rotor that does not move on its own. **Never reach in past the safety curtain.** If a jam results, stop the engine, wait for the rotor to stop, then clear the jam.

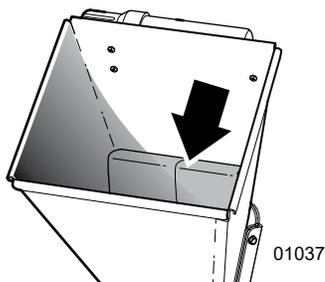


Fig. 27–Feed Hopper Safety Curtain

5. Make sure the wood chip pile is contained and does not affect the immediate work area.

6.8 Shredder Operation

CAUTION!

Keep shredder gate closed between feeds to keep flying material contained in the shredder housing. Do not prop open the gate. Material can fly out causing injury.

W071

WARNING!

Never reach into the feed hopper. Doing so risks hands getting caught. Use a stick or branch to push in any material that does not move on its own.

If jammed, stop the engine, wait for the rotor to stop, then clear the jam.

W004

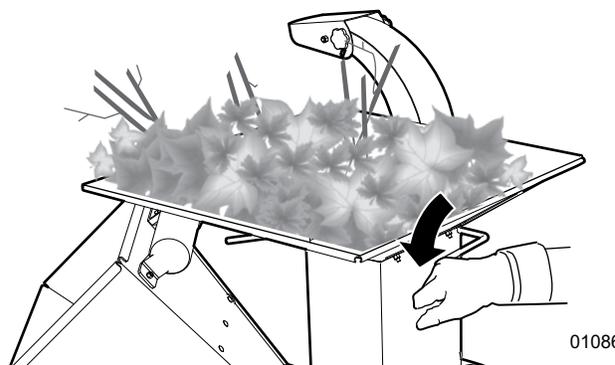
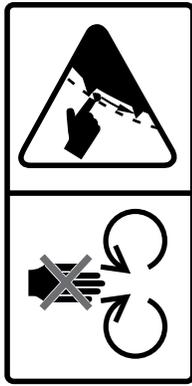


Fig. 28–Shredder Feed Control Handle

- Place leafy/small diameter wood material into the hopper and then manually open the gate. Release the gate when the material enters the shredder. When placing large, bushy, bulky material into the hopper, most of the time the shredder rotor will pull it in.
- Make sure the gate is closed between feeds to keep flying material contained in the shredder housing. Do not prop open the gate.
- If the shredder begins to slow down, stop and let the shredder get back up to speed, then restart feeding.



- Do not reach into the shredder feed hopper further than the gate to avoid contact with the knives on the rotor.
- Use a stick or branch to push any piece of material into the knives that does not move on its own and stops in the chipper housing.

6.9 Machine Break-In

Although there are no operational restrictions on the wood chipper when used for the first time, it is recommended that the following mechanical items be checked:

After 1–5 hours of operation:

1. Review the engine operator's manual for break-in information.
2. Inspect the axle, tires, and wheel hubs.
3. Check tire pressure. Inflate as indicated on the tire sidewall.
4. Check drive belt alignment. Re-align if required. See *page 38*.
5. Check belt tension. Adjust if required. See *page 38*.
6. Check condition of rotor bearings. Make sure they are not overheated and turn freely.
7. Check the condition and clearance of the twig-breaker, rotor and ledger knives. Adjust as required.
8. Check for entangled material. Remove before resuming work.
9. Check that all fasteners and hardware are tight.

After 8 hours of operation:

10. Repeat all previous steps.
11. Perform all the checks in the Pre-operation Checklist.

6.10 Plugged Chipper, Clearing

The chipper is designed to handle a wide range of materials without any problem. However, in the event material gets lodged in the chipper, follow this procedure to clear the blockage:

WARNING!

Never reach into the feed hopper. Doing so risks hands getting caught. Use a stick or branch to push in any material that does not move on its own.

If jammed, stop the engine, wait for the rotor to stop, then clear the jam.

W004

1. Stop the engine. Wait for all moving parts to stop.
2. Pull any material out of the chipper hopper and shredder hopper. Check that nothing is jammed or wedged between the input opening and the rotor.
3. Pull any material out of the discharge hood. Use a stick to poke any jammed material loose. Make sure the discharge chute is clear.
4. Try restarting to see if the jam is cleared.

If the chipper is still plugged, the jammed material must be removed by hand.

5. Place the machine in a safe condition. See *page 7*.
6. Place the machine in a safe condition. Remove the upper rotor housing anchor bolt and open the rotor housing.

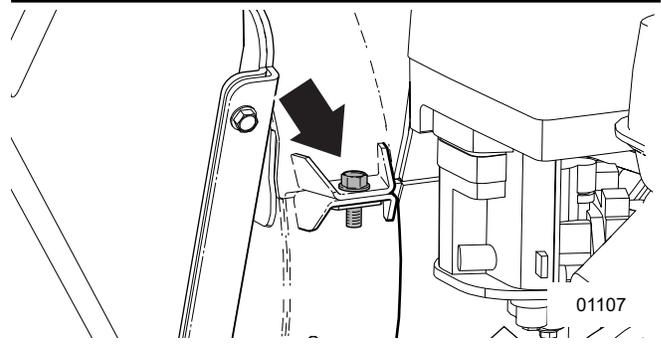


Fig. 29—Upper Rotor Housing Bolt

CAUTION!

Avoid reaching into rotor compartment. Rotor chipper blades are very sharp. If reaching inside is necessary, use extreme care.

W003

7. Remove jammed material from inside the chipper rotor and shredder compartment.

8. Clean out the discharge area rotor paddles.
9. Turn the rotor by hand to be sure there is nothing jammed between the rotor and stationary blades.

! WARNING!

Machine shown with guards removed for illustrative purposes only. Never operate machine with guards removed.

W001

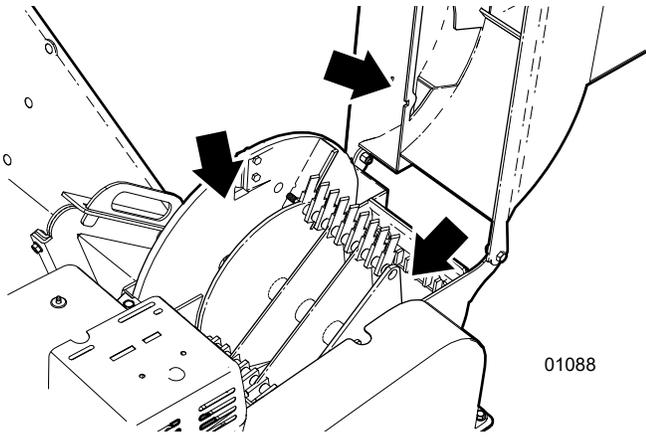


Fig. 30—Clear out areas inside of chipper

10. Once cleaned out, close and secure the rotor housing.
11. Check that everyone is clear of machine before restarting engine.

6.11 Transporting the Machine

- **Do not exceed a safe travel speed. Slow down for rough terrain and cornering.**
- **Do not transport or move the chipper with the engine running.**
- **Inspect tires for cuts or damage. Check tire pressure.**
- **Inspect all access panels and guards to ensure they are secured.**
- **Make sure fuel tank cap is tight to prevent spills while transporting.**
- **Clean debris from the machine.**
- **Never allow riders on the machine.**

Before Transporting

1. Make sure the chipper is securely attached to the tow vehicle.
2. Raise the jack and secure it with the snapper pin
3. Turn the discharge hood and position over the machine to reduce the width of the machine.
4. Ensure upper rotor housing is securely bolted.
5. Never exceed a safe travel speed. Slow down when encountering rough road conditions and cornering.

6.12 Storage

After the season's use or when the chipper is not going to be used for a period, place the machine in storage.

- Clear out any debris from the machine.
- Wash the machine then operate it for few minutes to dry out the moisture from the inside.
- Thoroughly inspect the chipper. Check condition of the drive belt and pulley. Replace or repair worn or damaged parts.
- Store the unit in an area away from human activity. Do not let children play on or around the stored machine.
- Store the unit in a dry, level area. Support the frame with wood blocking if required.
- Turn fuel valve off.
- If storing for long periods, add fuel stabilizer to the fuel tank. Run the engine for 2–3 minutes so the stabilizer gets into the fuel system. Consult the engine owner's manual for specific information relating to engine storage.
- Remove the battery and store it in a cool, dry area on wooden blocks or a wooden pallet. Connect it to a battery maintainer.
- If the chipper cannot be stored inside, cover it with a water proof tarp.

6.12.1 Removal from Storage

- Install and connect the battery.
- Follow the Pre-operation Checklist before start-up. See *Pre-Operation Checklist on page 26*.

7. Service and Maintenance

7.1 Maintenance Safety

Good maintenance is your responsibility. Poor maintenance is an invitation to trouble.

- Follow good shop practices:
 - Keep service area clean and dry.
 - Be sure electrical outlets and tools are properly grounded.
 - Use adequate light for the job at hand.
- Never operate the machine or the towing vehicle inside of a closed building. Make sure there is plenty of ventilation. Exhaust fumes may cause asphyxiation.
- Before servicing or repairing this machine, make sure it is safe to work on. See Safe Condition page 7.
- Allow engine and components to cool before performing maintenance. Hot components can cause burns to exposed skin.
- Never work underneath equipment unless it is securely blocked or supported.
- When performing any service or maintenance work, always use appropriate personal protection equipment.
- Where replacement parts are necessary, genuine factory replacement parts must be used to restore your equipment to original specifications. The manufacturer is not responsible for injuries or damages caused by use of unapproved parts or accessories.
- A fire extinguisher and first aid kit should be kept readily accessible while performing maintenance on this equipment.
- Inspect and tighten all bolts, nuts and screws and check that all electrical and fuel connections are properly secured to ensure chipper is in a safe working condition.
- After completing a service procedure, make sure all safety shields and devices are reinstalled.
- When performing maintenance on this equipment always have at least two workers present. Do not work alone in case an emergency should arise.
- When cleaning any parts, do not use gasoline. Use a regular cleanser.
- Always use proper tools in good condition.



WARNING!

Machine shown with guards removed for illustrative purposes only. Never operate machine with guards removed.

W001

7.2 Fluids and Lubricants

1. Engine Oil

SAE 10W-30 motor oil is recommended for general use. Refer to the engine manufacturer's manual for maintenance and service information.

2. Grease

Use an SAE multi-purpose high temperature grease with extreme pressure (EP) performance. Also acceptable is an SAE multipurpose lithium-based grease.

3. Engine Fuel

This engine is certified to operate on unleaded gasoline with a pump octane rating of 86 or higher (a research octane rating of 91 or higher).

4. Storing Lubricants

Your machine can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture and other contaminants.

7.3 Maintenance Schedule

Perform maintenance procedures at time shown or hour interval, whichever comes first.

Every Use	
Check engine oil and fuel levels.	
Clear out any entangled material from chipper.	

Every 8 hours or Daily	
Perform Pre-operation check.	See page 26
Check engine air filter.	Refer to engine manual.
Check shredder blade function.	—
Observe proper drive belt operation.	See page 38

Every 50 hours or Annually	
Check rotor blade sharpness.	See page 40
Check ledger knife sharpness.	See page 40
Check shredder blade sharpness.	See page 41
Lubricate pivot points, hinges.	—

Every 100 hours or Annually	
Grease rotor bearings.	See page 36
Check tire pressure.	Refer to specification on tire sidewall.
Clean wood chipper. Remove any entangled material, debris.	—
Check drive belt tension.	See page 38

7.4 Grease Points



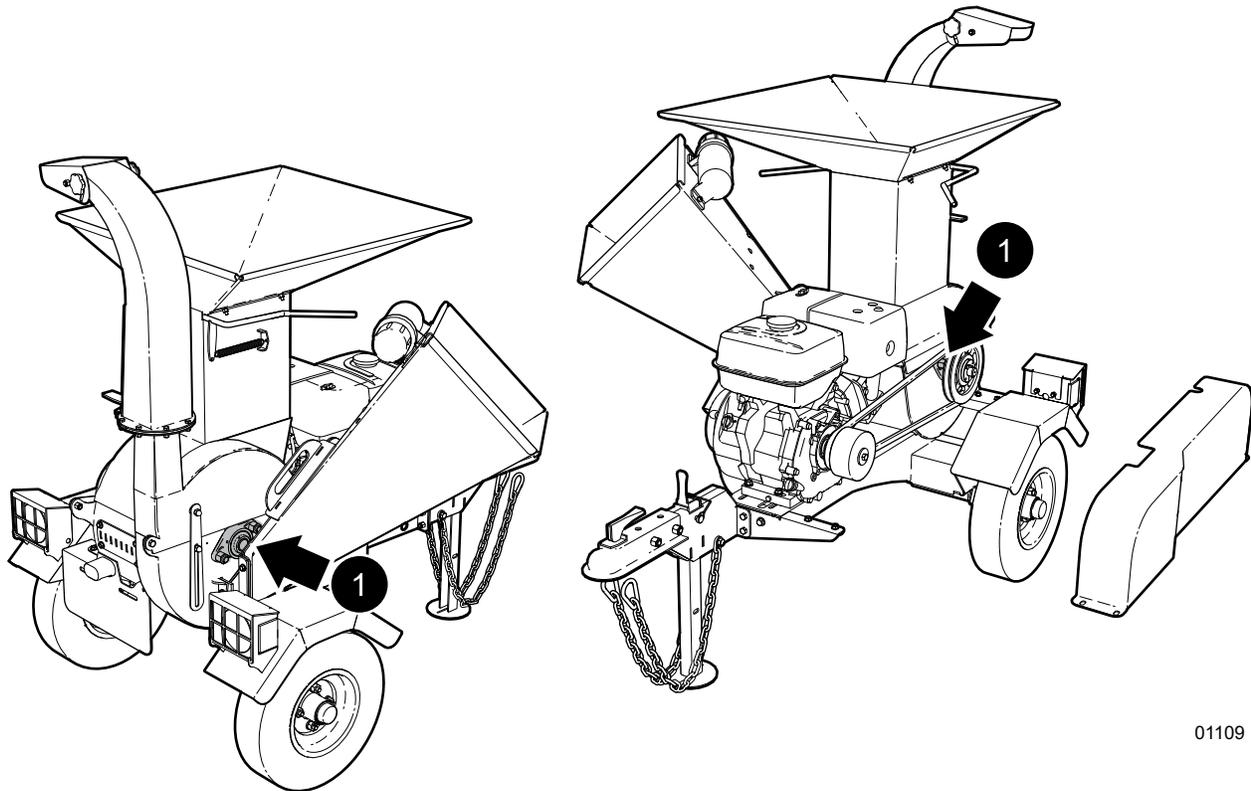
Look for this decal on your machine. It indicates a grease point and the interval in hours.

- Wipe grease fitting with a clean cloth before greasing to avoid injecting dirt and grit.
- If fittings do not take grease, remove and clean them thoroughly. Replace grease fittings as necessary.

Location	Every 100 hours of operation or annually
1	Rotor bearings, one shot per side.

IMPORTANT! Use a hand-held grease gun for all greasing. Pump one shot of grease per fitting.

Do not over grease. Too much grease can cause the bearing seals to fail.



01109

Fig. 45 – Grease Points

7.5 Engine Air Cleaner

Check air filter every 50 hours of operation. Change air filter elements every 100 hours of operation or annually.

 **NOTE:** Refer to the engine manual for information on servicing the air cleaner.

A dirty air filter can restrict air flow to the carburetor, reducing engine performance. If the engine is operated in very dusty areas, clean the air filter more often than specified.

IMPORTANT! Operating the engine without an air filter, or with a damaged air filter, can allow dirt to enter the engine, causing rapid engine wear. This type of damage is not covered by warranty.

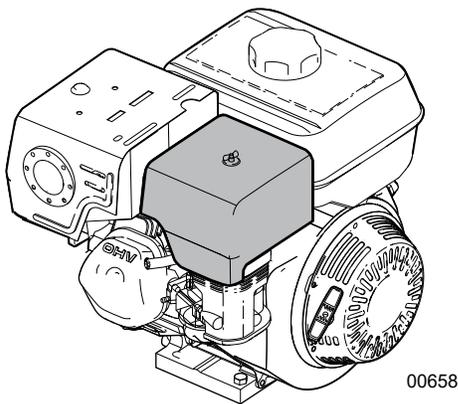


Fig. 31—Air Cleaner on Engine

7.5.1 Inspection

Remove the air cleaner cover and inspect the filter elements. Clean or replace dirty filter elements. Always replace damaged filter elements.

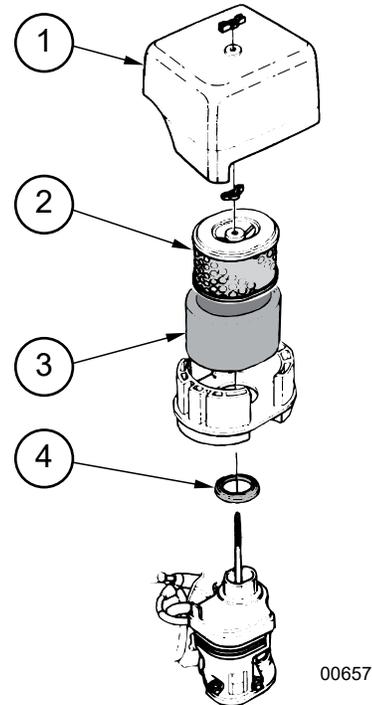


Fig. 32—Air Cleaner Assembly

1. Air Cleaner Cover
2. Paper Filter Element
3. Foam Filter Element
4. Gasket

7.6 Drive Belt Replacement

The chipper has a centrifugal clutch mounted on the engine shaft used to drive the rotor plate sheave. When the drive belt is in disrepair or loose, the ability to efficiently drive the rotor may be affected. Therefore, it is important to periodically check belt condition and tension. A frayed, cracked or worn drive belt should be replaced.

IMPORTANT! If changing or removing drive belt, always set correct belt tension. Make sure engine and rotor sheaves align properly.

Check drive belt tension every 100 hours of operation.

Make sure the engine is off and components are cool to touch beforehand.

1. On the side of the chipper, remove the belt guard.
2. Loosen (do not remove) the four engine mount bolts—two per side.
3. Turn the belt tensioning bolt counterclockwise to loosen the belt. Loosen enough so that the engine can be slid back, and the belt can be removed.

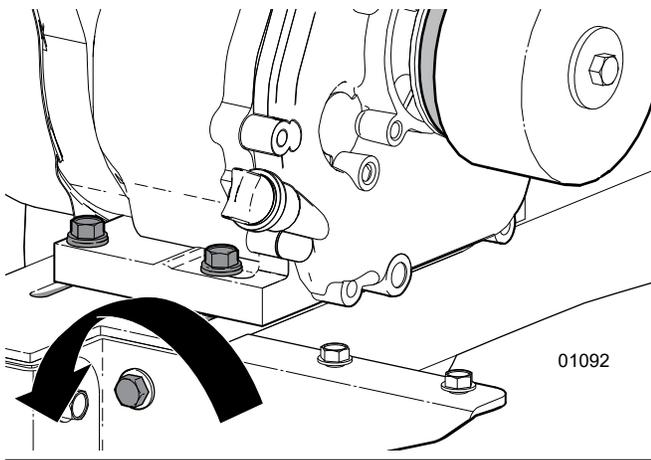


Fig. 33—Drive Belt Tension Adjuster Bolt

4. Install the new belt and slide the engine forward.

Tensioning

For accurate measurement use a drive belt tension gauge. If one is not available, the following method can be used.

5. Turn the belt tensioning bolt clockwise pulling the engine to tighten the belt.
6. Use your hand to check belt deflection by pressing on the top, center of the belt. Correct belt tension is when it does not deflect more than 1/2–5/8" (12–16 mm). Adjust accordingly.

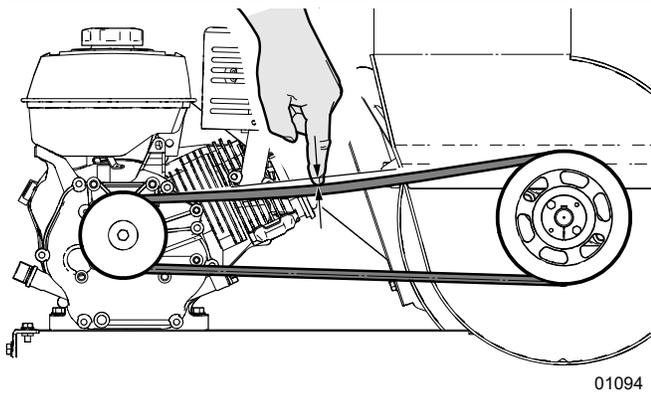


Fig. 34—Rotor drive belt tension

7. Turn adjuster accordingly. Be aware of belt alignment when adjusting belt tension. See *Alignment* to follow.
8. When belt tension is correct, recheck belt alignment. Tighten all four engine mount bolts. Torque to **33 lbf•ft (45 N•m)**.
9. Reinstall belt shield.
10. Recheck belt tension after 10 hours of operation.

7.6.1 Alignment

Observe drive belt alignment every 8 hours of operation.

For accurate measurement use a laser alignment tool. If one is not available, the following method can be used.

The maximum offset (misalignment) is 1/32" (1 mm).

1. Remove the belt guard.
2. Place a straight edge along the inner face of the engine clutch and back side of the rotor sheave. Check the space between the drive belt and the straight edge. The gap should be even along the length of the straight edge.

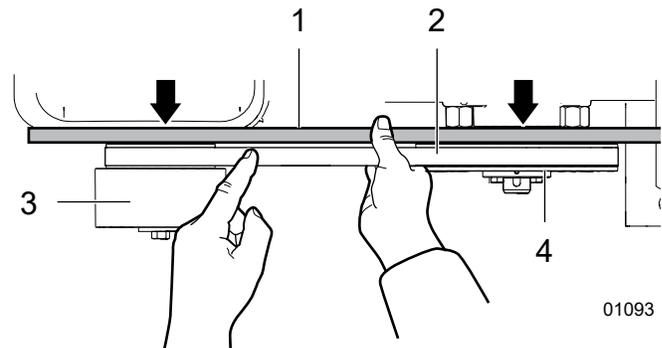


Fig. 35—Drive Belt alignment

- | | |
|------------------|------------------|
| 1. Straight Edge | 3. Engine Clutch |
| 2. Drive Belt | 4. Rotor Sheave |

3. If the gap is not even along the length of the belt, determine whether the engine is square to the chipper frame. It may also be that the rotor sheave has moved in or out on the shaft. Belt alignment can be corrected two different ways:
 - Turning the engine on the mount
 - Adjusting the rotor sheave in or out on the shaft.

Engine Mount Misalignment

After changing the drive belt or loosening the engine mounts, the belt may become misaligned.

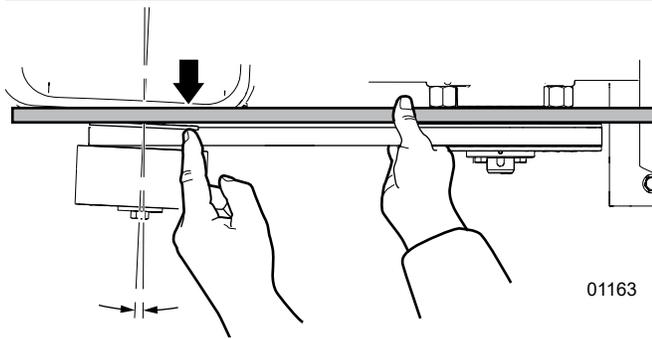


Fig. 36—Engine Mount Misalignment

1. Loosen the four engine mount bolts. If one corner of the engine mount does not need to move, leave that bolt snugged up.

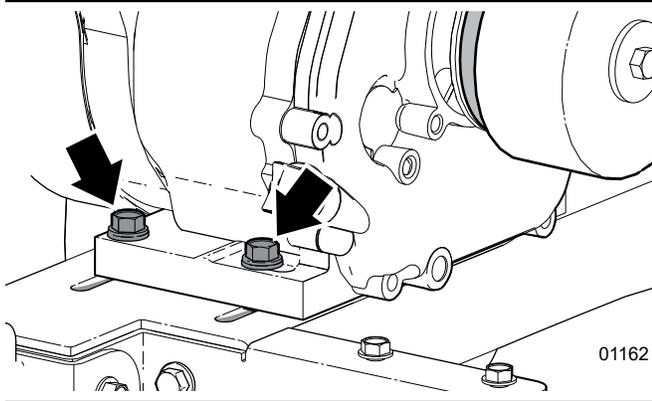


Fig. 37—Engine Mount Bolts

2. Twist the engine to one side or the other on the base to adjust engine position. Recheck belt/sheave alignment. Repeat to get the best result.
3. Tighten engine mount bolts. Recheck belt tension and adjust if required.

Rotor Sheave Misalignment

If the rotor sheave loosens on the shaft, it can become misaligned with the engine clutch resulting in poor belt alignment.

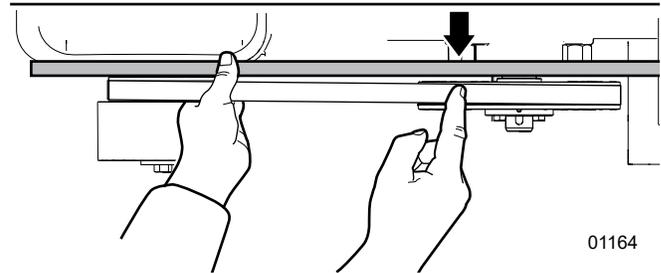


Fig. 38—Rotor Sheave Misalignment

1. Remove the drive belt.

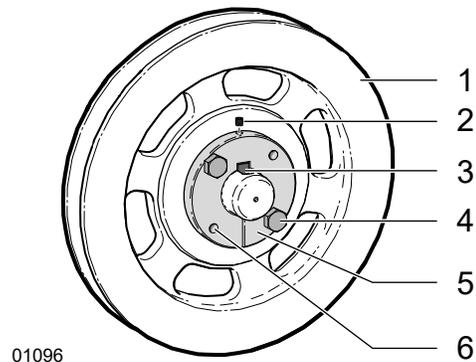


Fig. 39—Rotor Sheave

- | | |
|--------------|--------------------------|
| 1. Sheave | 4. Sheave Bolts |
| 2. Set Screw | 5. Sheave Hub |
| 3. Shaft key | 6. Threaded Puller Holes |
2. Remove the set screw from the sheave (2).
 3. Remove the sheave bolts (4) and thread them into the puller holes on the sheave hub (5).
 4. Turn in both bolts evenly in 1/4-turn increments to pull the hub and the sheave slightly apart so they can move on the shaft.
 5. Lightly tap the sheave hub with a block of wood to move it in or out on the shaft so it is re-aligned with engine clutch sheave. Confirm with the straight edge along the face of the engine clutch and rotor sheave.
 6. Once aligned, insert the hub bolts and snug them up to the sheave. Recheck alignment.
 7. Tighten hub bolts evenly in 1/4-turn increments until firmly seated. Install and tighten the set screw.
 8. Re-check the alignment again with the straight edge once the bolts are tight. Re-check belt tension.
 9. Reinstall the guard.

7.7 Rotor Blades

Observe rotor blade sharpness at each use. Sharpen every 50 hours of operation.

The rotor and ledger knives need to be sharp for the best performance. Periodic inspection is recommended. Keep the blades sharp to reduce the amount of power required during operation.

Check blade sharpness more often if processing material with a lot of sand, soil or dirt in it. **If the chipper is not pulling the material or material must be pushed into the chipper, the edges of the rotor blades have rounded over and are probably dull.**

Reverse or sharpen the blades if the cutting edges become dull. When replacing, reversing or sharpening, always do both blades.

7.7.1 Changing

CAUTION!

Risk of getting hands pinched or wedged between lower rotor housing and rotor. Turn rotor slowly and be aware of hand positioning.

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Procedure

1. Open the upper rotor housing. Turn the rotor around by hand as required to access the blades.
2. Check whether the blades can simply be rotated (turned) or need to be removed to be sharpened or replaced.

IMPORTANT! Rotor blades can be sharpened on both sides as long as the correct clearance between them and the ledger knife is maintained.

3. To sharpen, remove both blades from the rotor.
4. Sharpen each at a 45° angle to provide the best cutting effect.

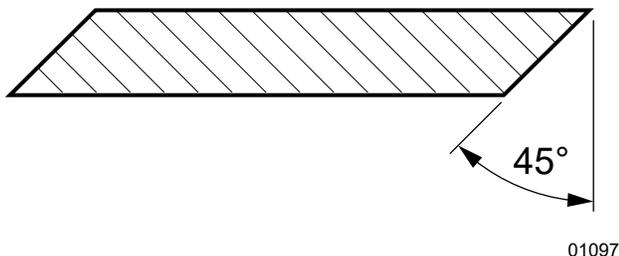


Fig. 40 – Sharpen Blade at 45° angle

IMPORTANT! Make sure equal amount of material is removed from EACH blade when sharpening to maintain proper rotor balance.

5. Install rotor blades with leading edge out, towards the ledger knife as shown. Tighten the blade mounting bolts to **45 lbf•ft (63 N•m)**.

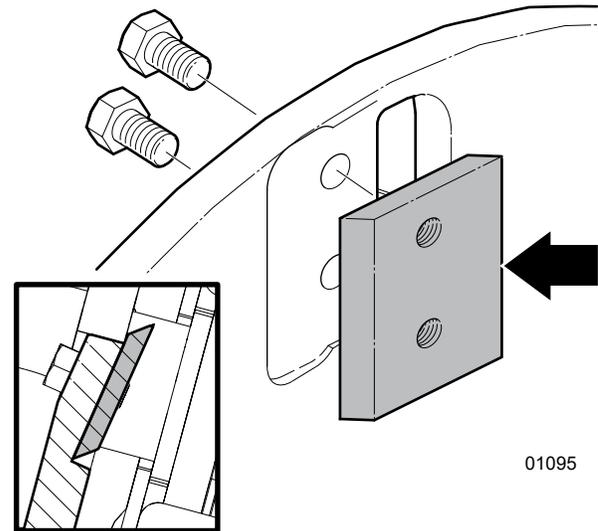


Fig. 41 – Rotor blade leading edge outward

IMPORTANT! If replacing or sharpening a blade, do the opposite one on the rotor as well to maintain rotor balance. The clearance must be the same for each blade as it passes the ledger knife.

7.8 Ledger Knife

Observe Ledger Knife sharpness at each use. Sharpen every 50 hours of operation.

Material in the chipper is sheared off at the stationary ledger knife as the rotor blades pass by.

The ledger knife can be turned or rotated so that all four edges on the long sides of the blade can be used. When the corner facing the rotor blade rounds over, remove the blade and re-install with a different corner facing the rotor blades.

Once all four corners have rounded over, remove the blade and sharpen it. If the blade has been sharpened on both ends to the point where proper clearance is no longer possible, replace the blade.

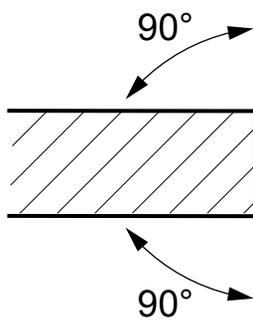
7.8.1 Adjusting Clearance

1. Loosen the ledger knife bolts and adjust it inward. Snug the bolts by hand.
2. Turn the rotor around so that one of the rotor blades is directly in line with the ledger knife.
3. Tap the ledger knife inward toward the rotor blade. Use the clearance setting gauge to set clearance between the two. If one is not available, set the clearance to 1/32–1/16" (1 – 1-1/2 mm).
4. Tighten the bolts to **33 lbf•ft (45 N•m)**.

7.8.2 Sharpening

All four corners of the knife can be used. In the event all four corners of the blade have rounded over, remove the blade to sharpen it.

1. Sharpen both long edges of the blade at 90°.



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Fig. 42—Sharpening Ledger Knife

2. Reinstall the blade and set proper clearance. Tighten bolts to proper torque setting.

7.9 Chop Block

Observe chop block function at each use. Sharpen or rotate every 50 hours of operation.

The chop block is bolted in at the bottom of the upper rotor housing. Its purpose is to help break material into smaller pieces and turn it into mulch as the shredder knives pass when the rotor is turning.

Inspect the chop block for damage such as gouges, or bent, missing teeth. A damaged chop block should be replaced. If teeth are showing wear, the chop block can be turned around and installed the other way.

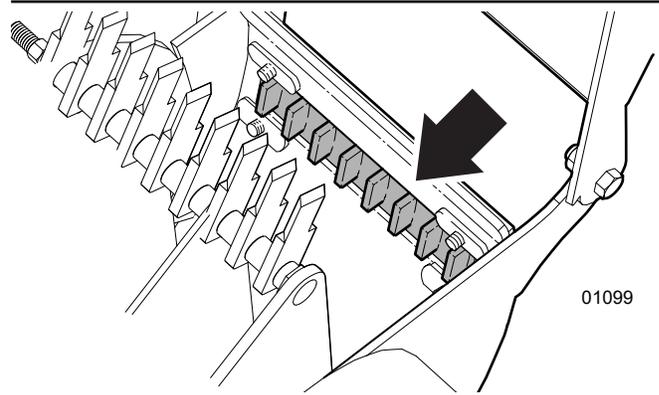


Fig. 43—Chop Block in Rotor Housing

7.10 Shredder Knives

Observe shredder knife operation at each use. Sharpen every 50 hours of operation.

The shredder rotor has three sets of swinging knives. Each knife has a beveled edge that cuts, chops and mulches material as it moves around the rotor compartment through the chop block. The chop block helps to break the material into smaller pieces and turn it into mulch.

The sized opening in the divider at the top of the rotor keeps the material inside the rotor housing until it becomes fine enough to move through to the rotor paddles and expelled out the discharge chute.

The shredder knives need to be sharp for the best performance. Periodic inspection is recommended.

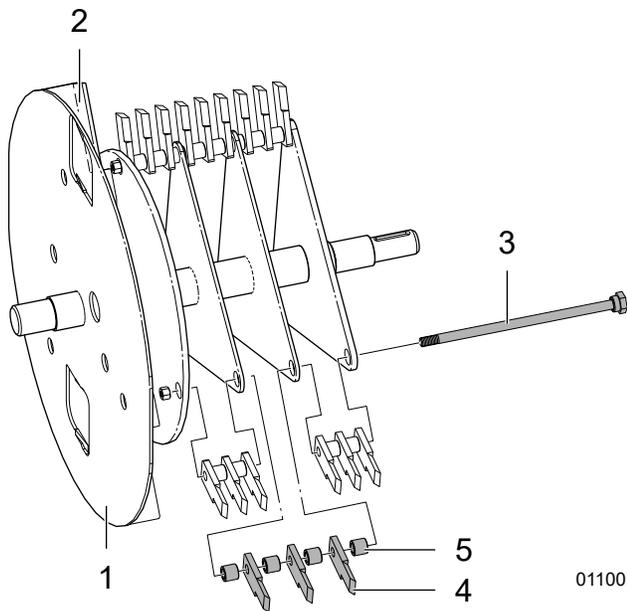


Fig. 44–Rotor Assembly

- | | |
|------------------------|-------------------|
| 1. Rotor | 4. Shredder Knife |
| 2. Rotor Paddle | 5. Spacer |
| 3. Hammer Retainer Pin | |

7.10.1 Shredder Knives, Changing

1. Open the upper rotor housing.
2. Manually turn the chipper rotor plate so that one set of shredder knives is fully exposed.
3. Loosen the hammer retainer pin (3) that holds the set of shredder knives and spacers to the shredder plate.
4. Slowly remove the bolt while catching the knives and spacers as they become free.
5. Reverse the knife or replace with a new or sharpened knife. When installing knives, make sure the sharpened knife edge faces the direction of rotation (indicated by a decal on the housing).

IMPORTANT! Make sure the knives and spacers are installed in the correct sequence. Improper installation decreases performance.

6. Tighten the hammer retainer pin nut. Make sure the knives rotate freely.
7. Repeat steps for second and third sets of shredder knives.

7.11 Fuel Filter

Refer to the engine manual in the manual tube that came with this machine found.

8. Troubleshooting

The following table lists some problems that may be encountered, with possible causes and solutions.

If a problem persists after reading through the Troubleshooting section, contact your local dealer, distributor or Wallenstein. Have the serial number ready.

Engine Related Issues

Refer to the Honda® owner's manual.

Problem	Cause	Solution
Rotor does not turn.	Obstructed discharge.	Clear debris from discharge chute.
	Rotor plugged.	Inspect and clear chipper hopper lower rotor housing and rotor.
	Clutch seized.	Replace.
	Loose or broken drive belt	Re-tension or replace drive belt.
Material feeding in too slow.	Engine or rotor speed too low.	Make sure choke is off. Set throttle to increase rotor rpm.
	Blades or knives are dull or clearance incorrect.	Check rotor and ledger blades. Rotate, sharpen or replace.
	Rotor blade knife edge angle incorrect.	Re-sharpen rotor knives to specified 45° angle and check that blade is installed properly.
	Obstructed discharge.	Clear debris from discharge chute.
Unusual machine vibration while operating.	Broken or missing rotor blade.	Replace.
	Rotor may be bent.	Check for rotor wobble. Replace rotor.
	Rotor bearings failed.	Replace.
	Loose fasteners.	Tighten. See common bolt torque tables <i>page 45</i> .
Mulch too Course	Chop Block or Twig Breaker may be damaged.	Inspect Chop Block and Twig Breaker. Replace if damaged.
	Broken or missing blade or knife.	Replace.
	Shredder knives installed incorrectly.	Check installation of knives and adjust as required. See <i>page 41</i> .
Machine requires excessive power or stalls.	Obstructed discharge.	Clear debris from discharge chute.
	Feeding in too much material.	Feed smaller amounts into shredder hopper.
	Feeding material too quickly.	Feed larger material slowly into chipper hopper.
	Rotor plugged.	Inspect and clear chipper hopper, lower rotor housing, and rotor. See <i>page 31</i> .
	Green material does not discharge.	Allow material to dry or alternate dry/wet material.
	Chipper blade clearance too large.	Set clearance. See <i>page 40</i> .
	Dull rotor blades or ledger knife / shredder knives.	Rotate, sharpen or replace.

9. Specifications

9.1 Machine Specifications¹

Model	BXMT3213
Chipping Capacity	3" (8 cm)
Shredding Capacity	1" (3 cm)
Chipper Type	Disc
Feed System	Gravity / Self Feed
Shredder Type	Hammer Mill
Engine	Honda® GX390 / 389 cc / 13 hp (9.6 kW)
Chipper Hopper Opening	10" x 13" (29 cm x 32 cm)
Chipper Housing Opening	3" x 6" (8 cm x 15 cm)
Shredder Hopper Opening	28" x 30" (71 cm x 76 cm)
Shredder Housing Opening	10" x 10" (25 cm x 25 cm)
Number of Chipper Knives	2
Number of Shredder Knives	27
Rotor Diameter	18" (45 cm)
Rotor Weight	70 lb (32 kg)
Discharge Chute Height	58" (147 cm)
Discharge Chute Rotation	360°
Drive System	Centrifugal Clutch, Belt Drive
Engine speed	3600 rpm
Rotor speed	1600 rpm
Tires	4.80 X 8
Total Weight	520 lb (236 kg)
Dimensions (L x W x H)	44" x 60" x 58" (112 cm x 152 cm x 147 cm)
Fuel Tank Capacity	1.61 US gal (6.1 L)

¹ Specifications subject to change without notice

9.2 Common Bolt Torque Values

Checking Bolt Torque

The tables shown give correct torque values for various bolts and capscrews. Tighten all bolts to the torque values specified in the table, unless indicated otherwise. Check tightness of bolts periodically.

IMPORTANT! If replacing hardware, use fasteners of the same grade.

IMPORTANT! Torque figures indicated in the table are for non-greased or non-oiled threads. Do not grease or oil threads unless indicated otherwise. When using a thread locker, increase torque values by 5%.

 **NOTE:** Bolt grades are identified by their head markings.

Imperial Bolt Torque Specifications						
Bolt Diameter	Torque Value					
	SAE Gr. 2		SAE Gr. 5		SAE Gr. 8	
	lbf•ft	N•m	lbf•ft	N•m	lbf•ft	N•m
1/4"	6	8	9	12	12	17
5/16"	10	13	19	25	27	36
3/8"	20	27	33	45	45	63
7/16"	30	41	53	72	75	100
1/2"	45	61	80	110	115	155
9/16"	60	95	115	155	165	220
5/8"	95	128	160	215	220	305
3/4"	165	225	290	390	400	540
7/8"	170	230	420	570	650	880
1"	225	345	630	850	970	1320



Metric Bolt Torque Specifications				
Bolt Diameter	Torque Value			
	Gr. 8.8		Gr. 10.9	
	lbf•ft	N•m	lbf•ft	N•m
M3	0.4	0.5	1.3	1.8
M4	2.2	3	3.3	4.5
M6	7	10	11	15
M8	18	25	26	35
M10	37	50	52	70
M12	66	90	92	125
M14	83	112	116	158
M16	166	225	229	310
M20	321	435	450	610
M30	1,103	1 495	1,550	2 100



9.3 Wheel Lug Torque

It is extremely important safety procedure to apply and maintain proper wheel mounting torque on your trailer axle. Torque wrenches are the best method to assure the proper amount of torque is being applied to a fastener.

Wheel lugs should be torqued before first road use and after each wheel removal. Check and re torque after the first 10 miles (16 km), 25 miles (40 km), and again at 50 miles (80 km). Check periodically thereafter.

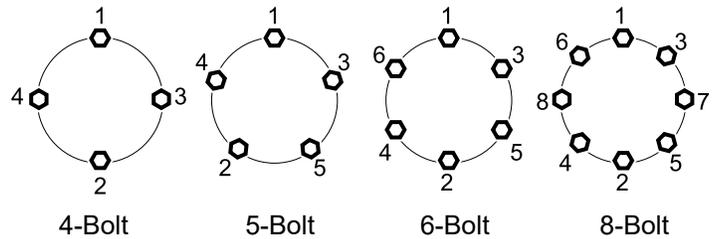
! WARNING!

Wheel lug nuts must be installed and kept at the proper torque value to prevent loose wheels, broken studs, or possible separation of wheels from axle.

- Start all lug nuts onto the threads by hand.
- Tighten lug nuts in stages, following the pattern shown in the Wheel Lug Nut Torque table.

Wheel Lug Nut Torque				
Wheel Size	Units	1st Stage	2nd Stage	3rd Stage
8"	lbf•ft N•m	12–20 16–26	30–35 39–45.5	45–55 58.5–71.5
12"	lbf•ft N•m	20–25 26–32.5	35–40 45.5–52	50–60 65–78
13"	lbf•ft N•m	20–25 26–32.5	35–40 45.5–52	50–60 65–78
14"	lbf•ft N•m	20–25 26–32.5	50–60 65–78	90–120 117–156
15"	lbf•ft N•m	20–25 26–32.5	50–60 65–78	90–120 117–156
16"	lbf•ft N•m	20–25 26–32.5	50–60 65–78	90–120 117–156

Wheel Lug Torque Pattern



10. Warranty



LIMITED WARRANTY

Wallenstein products are warranted to be free of defects in materials and workmanship under normal use and service, for a period of

Five Years for Consumer Use

Two Years for Commercial/Rental Use

from the date of purchase, when operated and maintained in accordance with the operating and maintenance instructions supplied with the unit. Warranty is limited to the repair of the product and/or replacement of parts.

This warranty is extended only to the original purchaser and is not transferable.

Repairs must be done by an authorized dealer. Products will be returned to the dealer at the customer's expense. Include the original purchase receipt with any claim.

This warranty does not cover the following:

- 1) Normal maintenance or adjustments
- 2) Normal replacement of wearable and service parts
- 3) Consequential damage, indirect damage, or loss of profits
- 4) Damages resulting from:
 - Misuse, negligence, accident, theft or fire
 - Use of improper or insufficient fuel, fluids or lubricants
 - Use of parts or aftermarket accessories other than genuine Wallenstein parts
 - Modifications, alteration, tampering or improper repair performed by parties other than an authorized dealer
 - Any device or accessories installed by parties other than an authorized dealer
- 5) Engines. Engines are covered by the manufacturer of the engine for the warranty period they specify. For the details of your engine warranty, see your engine owner's manual. Information about engine warranty and service is also available in the FAQ section at www.wallensteinequipment.com

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