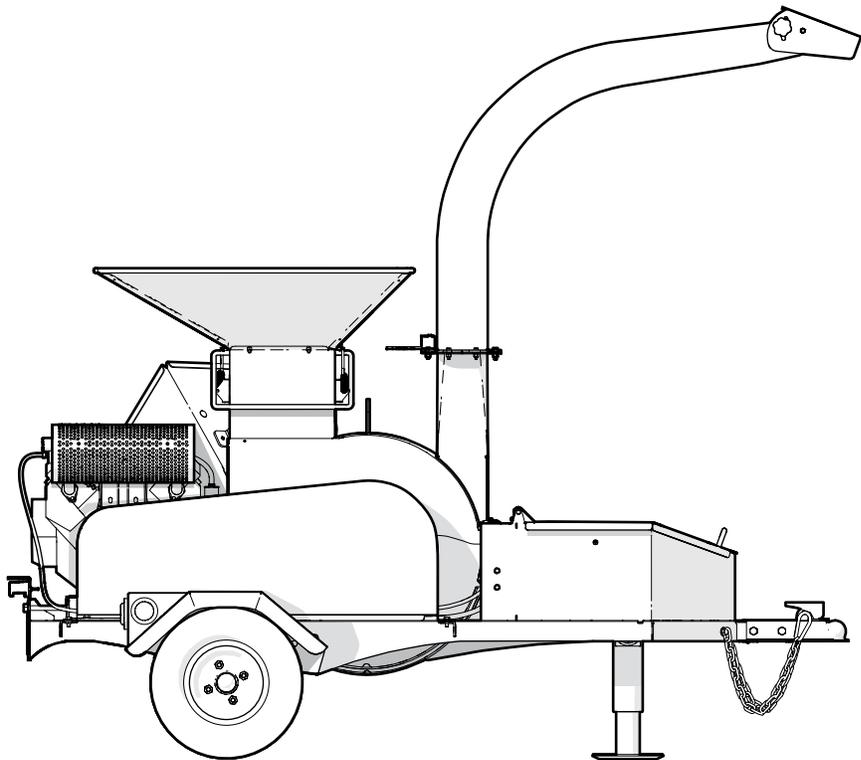


# OPERATOR'S MANUAL

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## **BXMT4224 / BXMT4238** **Trailer Chipper-Shredder**



# 1. Foreword

## 1.1 Introduction

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

The BXMT Chipper-Shredders are strong, rugged machines that can provide consistent chipping and shredding of materials. This manual covers the following Wallenstein models:

- BXMT4224**     Honda® GX690, 22 hp (16.5 kW)
- BXMT4238**     Kohler® CH980, 33 hp (25 kW)

Safe, efficient and trouble-free operation of this Wallenstein product requires anyone that uses 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)

### **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

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|   |                    |
|---|--------------------|
|                        | <b>WARNING</b>     |
| <b>Cancer and Reproductive Harm</b><br><a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a> |                    |
|                        | <b>ADVERTENCIA</b> |
| <b>Cáncer y Daño Reproductivo</b><br><a href="http://www.P65Warnings.ca.gov">www.P65Warnings.ca.gov</a>   |                    |

## Table of Contents

|  |           |   |           |
|--|-----------|---|-----------|
| <b>1. Foreword</b> .....                 | <b>2</b>  | <b>7. Service and Maintenance</b> ..... | <b>33</b> |
| 1.1 Introduction .....                   | 2         | 7.1 Maintenance Safety .....            | 33        |
| 1.2 Delivery Inspection Report.....      | 4         | 7.2 Fluids and Lubricants.....          | 33        |
| 1.3 Serial Number Location .....         | 5         | 7.3 Maintenance Schedule .....          | 34        |
| 1.4 Types of Decals on the Machine ..... | 6         | 7.4 Grease Points .....                 | 35        |
| <b>2. Safety</b> .....                   | <b>7</b>  | 7.5 Engine Air Cleaner.....             | 36        |
| 2.1 Safety Alert Symbol .....            | 7         | 7.6 Drive Belt Replacement .....        | 37        |
| 2.2 Signal Words .....                   | 7         | 7.7 Rotor Blades .....                  | 39        |
| 2.3 Why Safety is Important.....         | 7         | 7.8 Ledger Knife .....                  | 40        |
| 2.4 Safety Rules .....                   | 7         | 7.9 Chop Block .....                    | 41        |
| 2.5 Equipment Safety Guidelines .....    | 8         | 7.10 Shredder Knives .....              | 42        |
| 2.6 Safe Condition .....                 | 8         | 7.11 Twig Breaker.....                  | 43        |
| 2.7 Safety Training.....                 | 8         | 7.12 Fuel Filter.....                   | 43        |
| 2.8 Being Prepared.....                  | 9         | 7.13 Electrical System .....            | 43        |
| 2.9 Refueling Safety .....               | 9         | <b>8. Troubleshooting</b> .....         | <b>44</b> |
| 2.10 Tire Safety .....                   | 9         | <b>9. Specifications</b> .....          | <b>45</b> |
| 2.11 Battery Safety .....                | 9         | 9.1 Machine Specifications .....        | 45        |
| 2.12 Gas Engine Safety.....              | 10        | 9.2 Common Bolt Torque Values.....      | 46        |
| <b>3. Safety Signs</b> .....             | <b>12</b> | 9.3 Wheel Lug Torque .....              | 47        |
| 3.1 Safety Sign Locations .....          | 12        | <b>10. Warranty</b> .....               | <b>48</b> |
| 3.2 Safety Sign Explanations.....        | 14        | <b>11. Alphabetical Index</b> .....     | <b>49</b> |
| 3.3 Replacing Damaged Safety Signs ..... | 17        |   |           |
| <b>4. Familiarization</b> .....          | <b>19</b> |   |           |
| 4.1 Operator Orientation .....           | 19        |   |           |
| <b>5. Controls</b> .....                 | <b>21</b> |   |           |
| 5.1 BXMT4224 Engine Controls .....       | 21        |   |           |
| 5.2 BXMT4238 Engine Controls .....       | 22        |   |           |
| 5.3 Shredder Feed Gate Lever .....       | 23        |   |           |
| 5.4 Discharge Chute .....                | 23        |   |           |
| 5.5 Hood Deflector.....                  | 24        |   |           |
| 5.6 Hitch Coupler .....                  | 24        |   |           |
| <b>6. Operating Instructions</b> .....   | <b>25</b> |   |           |
| 6.1 Operating Safety.....                | 25        |   |           |
| 6.2 Before Startup.....                  | 26        |   |           |
| 6.3 Fuel Level, Checking .....           | 27        |   |           |
| 6.4 Engine Oil Level, Checking.....      | 27        |   |           |
| 6.5 Starting the Engine .....            | 28        |   |           |
| 6.6 Stopping the Engine .....            | 28        |   |           |
| 6.7 Chipping Operation.....              | 28        |   |           |
| 6.8 Shredder Operation .....             | 29        |   |           |
| 6.9 Machine Break-In.....                | 30        |   |           |
| 6.10 Clearing a Plugged Chipper.....     | 30        |   |           |
| 6.11 Transporting the Machine .....      | 31        |   |           |
| 6.12 Storage .....                       | 32        |   |           |

## 1.2 Delivery Inspection Report

### Wallenstein BXMT Series Trailer Chipper-Shredder

To activate warranty, register your product at: [www.wallensteinequipment.com](http://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

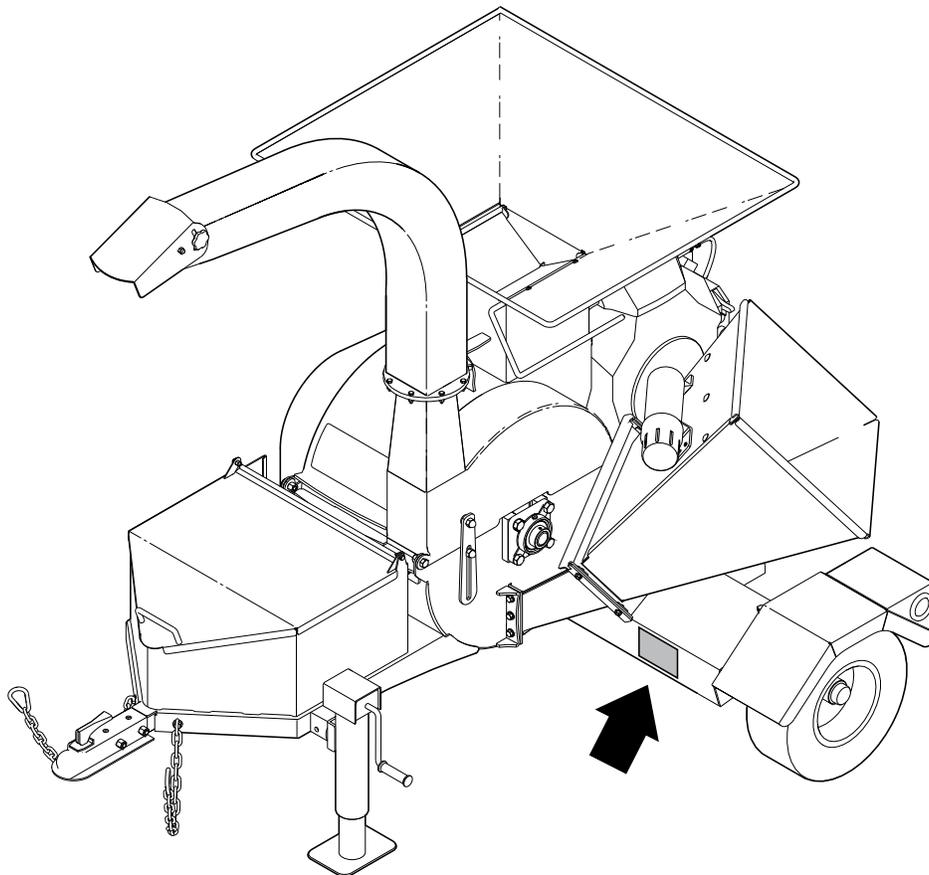
- All Safety Decals Installed
- Guards and Shields Installed and Secured
- Retainer Installed Through Hitch Points
- Operating and Safety Instructions Reviewed

### 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 Model and Serial Number in the spaces provided below for future reference.**

| Record Product Information Here |             |
|---------------------------------|-------------|
| Model:                          | <b>BXMT</b> |
| Serial Number:                  |             |



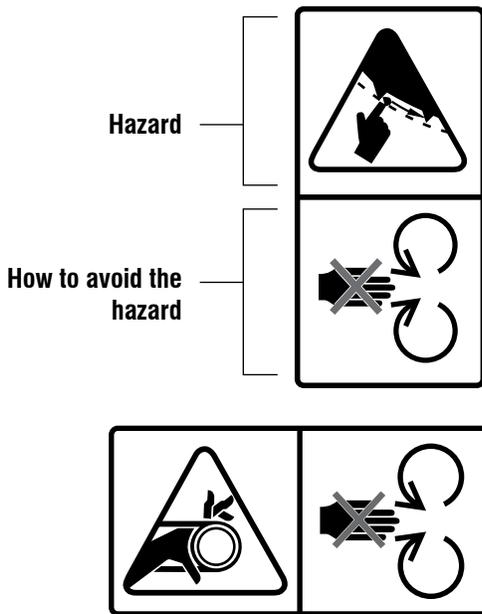
**Fig. 1 – Serial Number Plate Location (Typical)**

## 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.

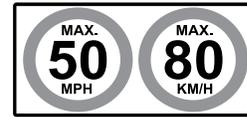
The top (or left-hand) panel shows the safety alert (the potential hazard), and the bottom (or right-hand) panel shows the message (how to avoid the hazard).



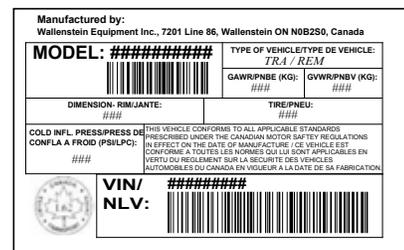
**Safety Notice Decals** are blue with a white background and generally rectangular with single or multiple symbols. This decal informs what Personal Protective Equipment is required for safe operation.



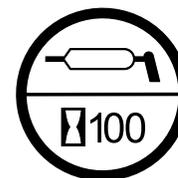
**Informative Decals** are generally pictorial with a white background and can vary in the number of panels. This type of decal provides additional information to the operator or explains the operation of a control.



**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](http://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 Wood Processor 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.



- **DO** think SAFETY! Work SAFELY!
- **DO NOT** expect a person who has not read and understood all use and safety instructions to operate the machine. An untrained operator is not qualified and exposes himself and bystanders to possible serious injury or death. It is the owner's responsibility to the operator to ensure familiarity and understanding of the machine.
- **DO NOT** allow riders during transport.
- **DO NOT** risk injury or death by ignoring good safety practices.

## 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. Remove ignition key.
- Make sure all moving parts have stopped.
- Disconnect battery ground (-) cable.
- Block or chock wheels.

## 2.7 Safety Training

Safety is a primary concern in the design and manufacture of Wallenstein products. Unfortunately, efforts to provide safe equipment can be wiped out by a single careless act.

- It is the operator's responsibility to read, understand and follow ALL safety and operation instructions in this manual. 
- 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.
- Know the tractor controls and how to stop the machine quickly in an emergency.
- 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:
  - 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
  - each of the safety messages found on the safety signs on the machine.
  - engine operator's manual
- 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
- Be aware of overhead hazards: branches, cables, electrical wires.
- Use this machine only in daylight or good artificial light.
- Be sure machine is properly mounted, 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.

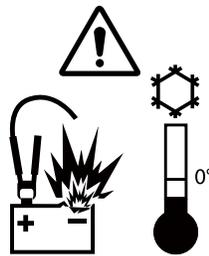
- Avoid contact with battery posts, terminals and related accessories, they contain lead and lead compound chemicals known to cause harm if ingested. Wash hands immediately after handling battery.
- Keep all sparks and flames away from batteries. Electrolyte fumes are explosive.
- To avoid injury from 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** run 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 and 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

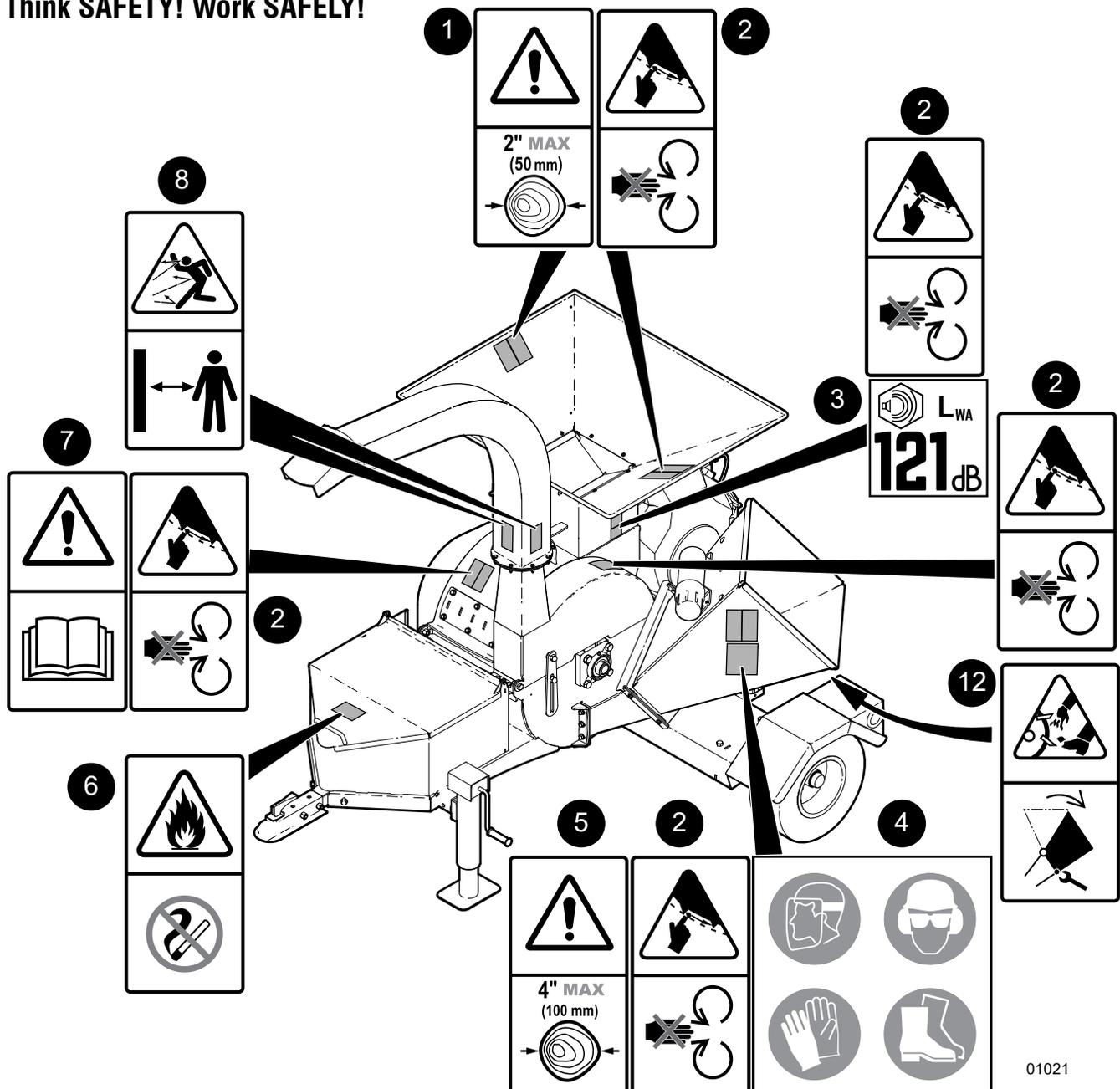
The types of safety signs and locations on the equipment are shown in the illustrations that follow. Good safety requires that you familiarize yourself with the various safety signs, the type of warning and the area, or function related to that area, that requires your SAFETY AWARENESS.

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.**

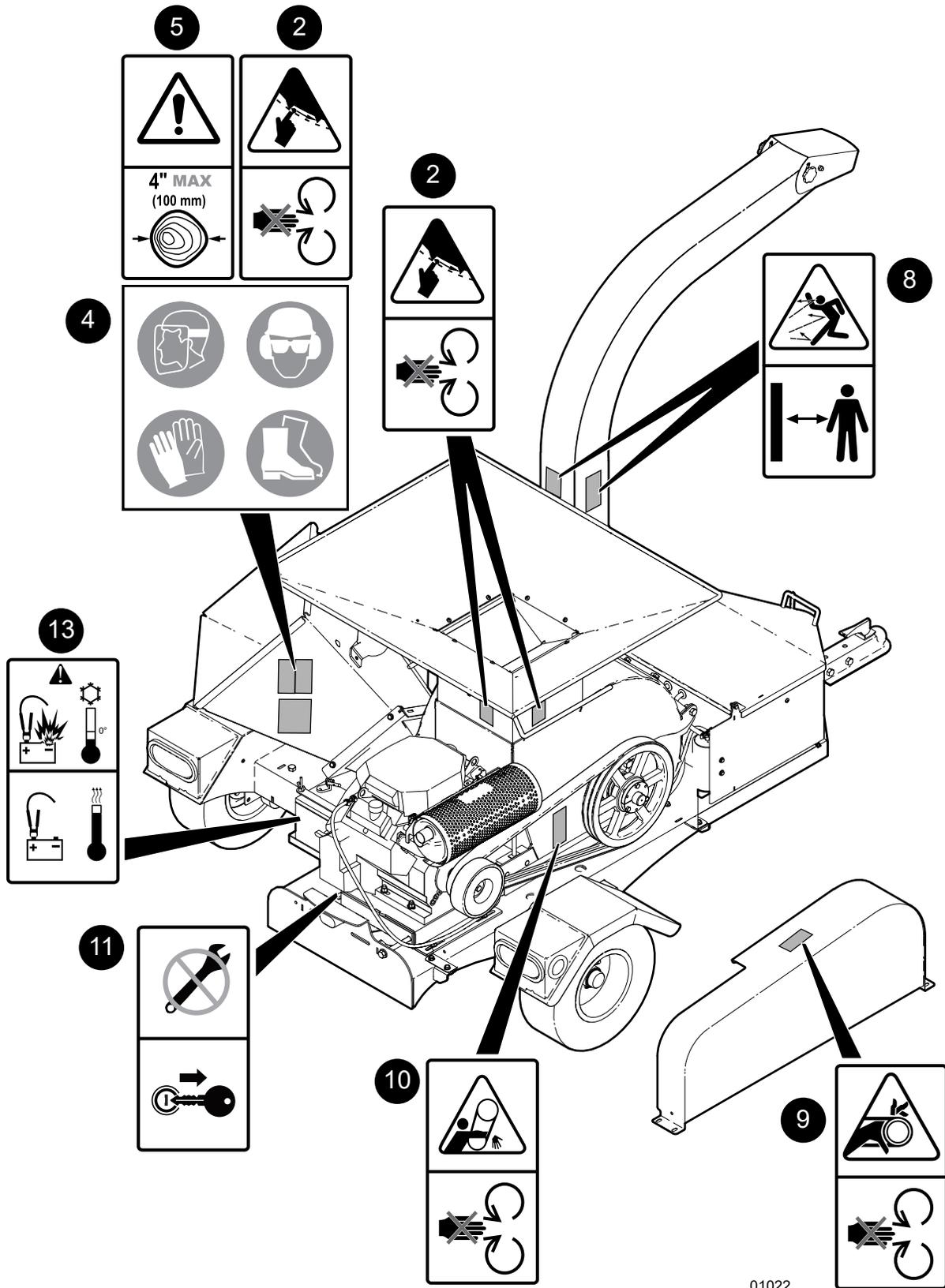
**Think SAFETY! Work SAFELY!**



01021

Fig. 2–Safety Decal Locations on BXMT4224 and BXMT4238

Safety



01022

Fig. 3—Safety Decal Locations on BXMT4224 and BXMT4238

## 3.2 Safety Sign Explanations

### 1. 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 2" (50 mm) in diameter.

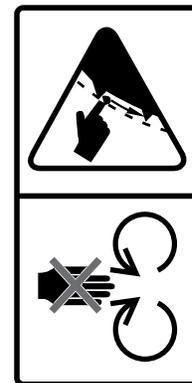
Machine damage could also result.



### 2. 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.



### 3. Noise Levels when Machine is Operating

**CAUTION! Always wear hearing protection when near the operating machine.**

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.



### 4. Personal Protective Equipment

**CAUTION! Always wear appropriate Personal Protective Equipment if 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



## 5. 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 4" (100 mm) in diameter.

Machine damage could result.



## 6. Fuel

### WARNING! Risk of explosion! Fuel vapors are extremely flammable.

Do not refuel the machine while smoking or fuel up near open flame or sparks.



## 7. 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!



## 8. 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.

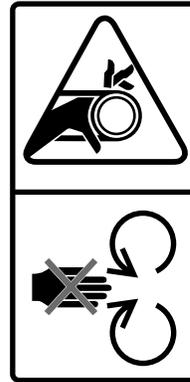
Do not point discharge at people, animals or buildings. Point chipper discharge away from work area and bystanders. Keep a safe distance from discharge.



### 9. 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.



### 10. Drive Belt

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

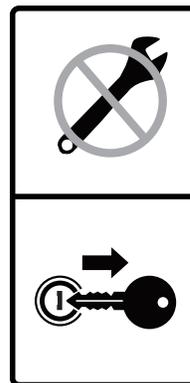
Never operate the machine with guard cover removed. Always keep guards and covers in place when machine is in operation. Keep hands clear of this area.



### 11. Servicing

**CAUTION! Do not risk of injury!**

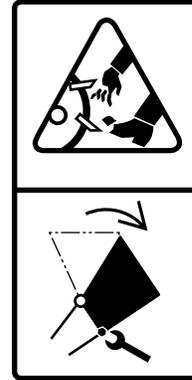
Before servicing or repairing the machine, shut down the engine and remove the ignition key (as equipped). Disconnect the battery negative (-) cable so that the engine cannot be started unexpectedly.



## 12. Raising Hopper

### CAUTION! Pinch Point Hazard!

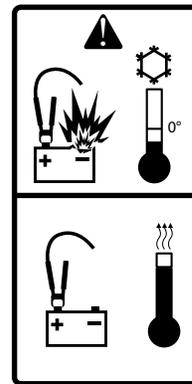
Pinch point hazard. When lowering or raising the hopper into position, be aware of pinch points and keep clear of them to avoid injury.



## 13. Battery

### CAUTION! Risk of Explosion!

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



## 3.3 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 something similar 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.

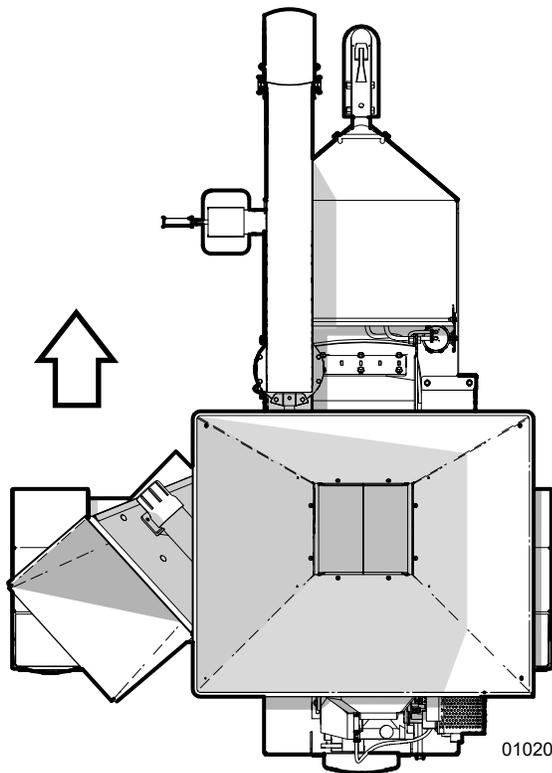
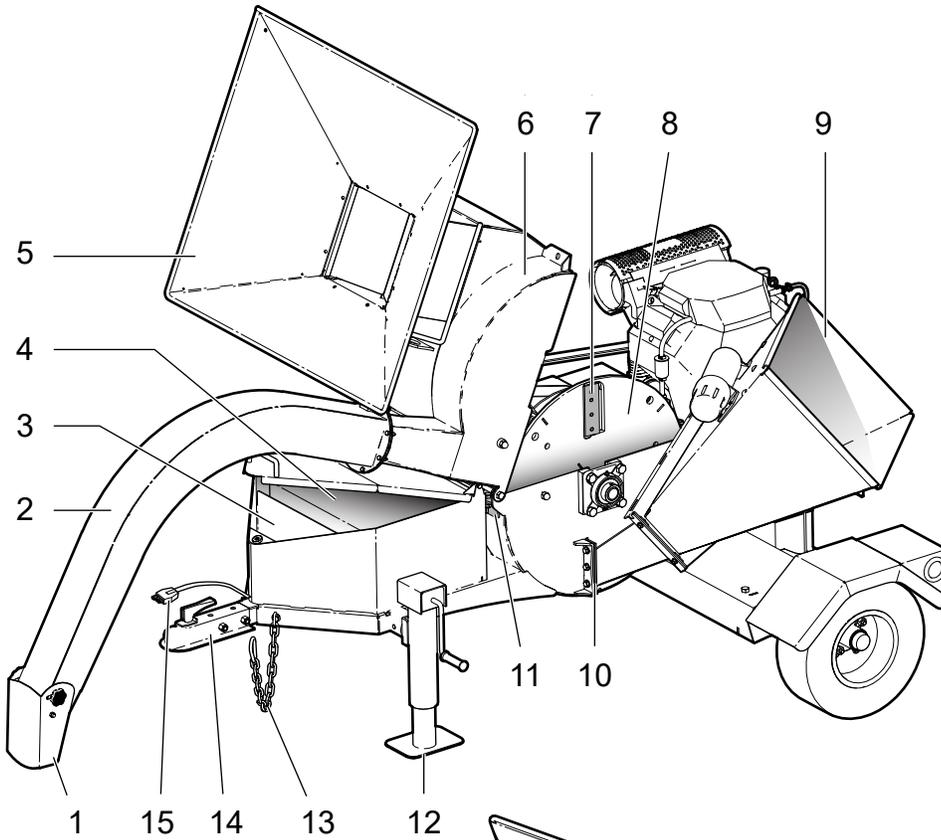


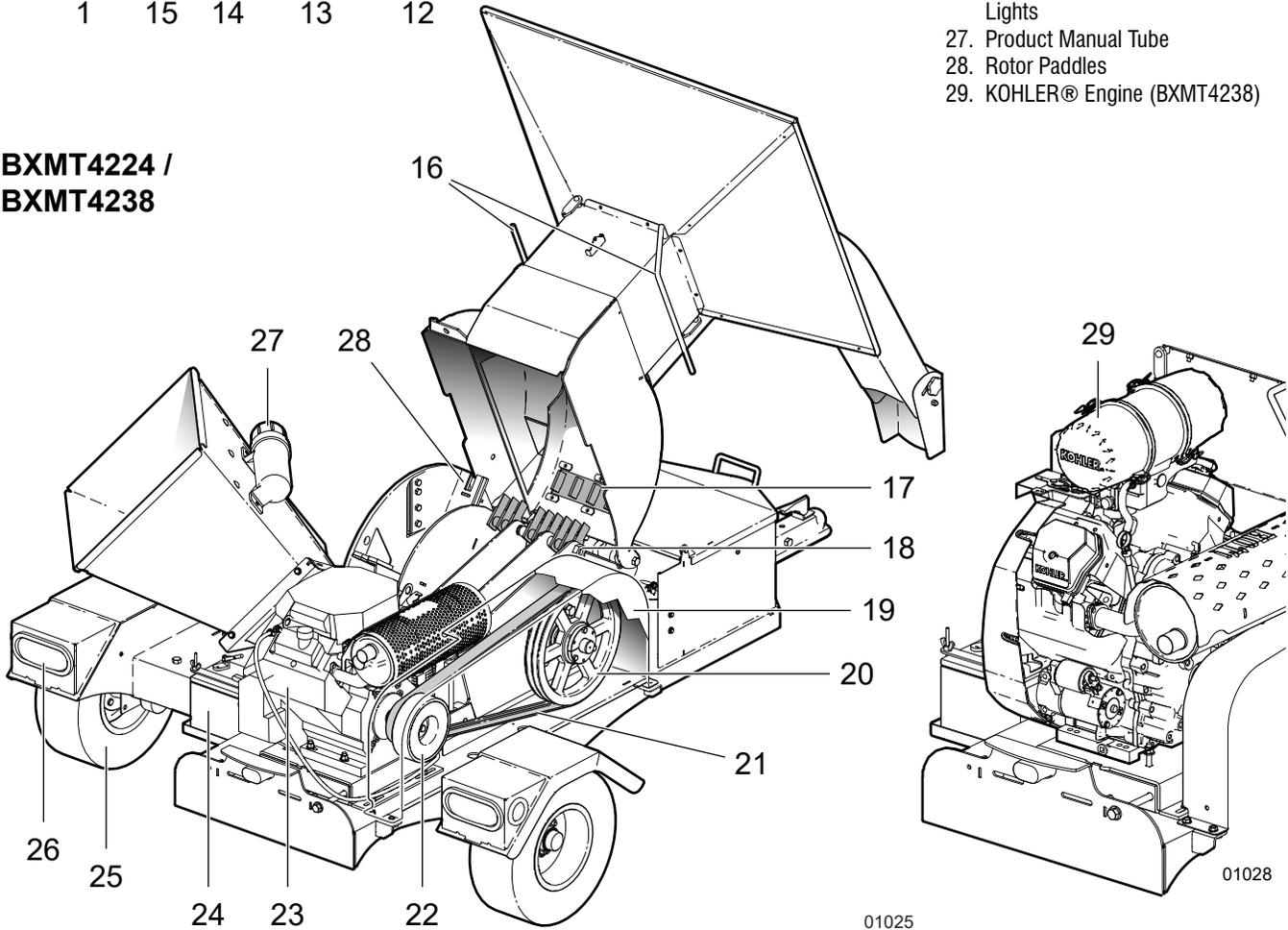
Fig. 4—Direction of forward travel

**Fig. 5—BXMT Components**



1. Hood Deflector
2. Discharge Chute
3. Storage Area
4. Fuel Tank
5. Shredder Feed Hopper
6. Upper Housing
7. Rotor Blade
8. Rotor
9. Chipper Hopper
10. Ledger Blade
11. Twig Breaker
12. Jack Stand
13. Safety Chains
14. Trailer Tongue
15. Light Harness
16. Shredder Feed Gate Levers
17. Chop Block
18. Shredder Knives
19. Belt Guard
20. Rotor Sheave
21. Double-B V-belt
22. Centrifugal Clutch
23. Honda® GX690 Engine (BXMT4224)
24. Battery
25. Tires, 16.5x6.5-8 LRC
26. Brake / Turn Signal / Marker Lights
27. Product Manual Tube
28. Rotor Paddles
29. KOHLER® Engine (BXMT4238)

**BXMT4224 / BXMT4238**



01025

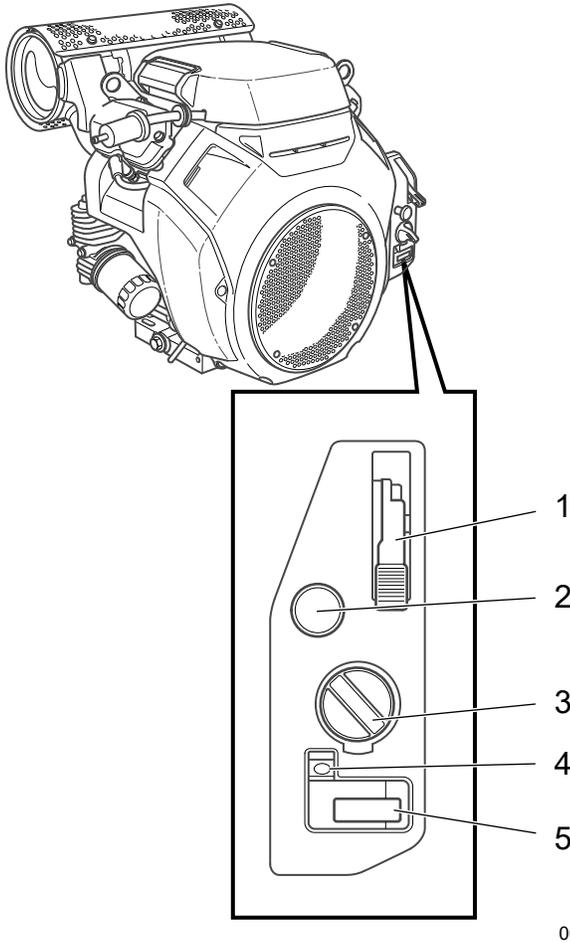
01028

## 5. Controls

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

### 5.1 BXMT4224 Engine Controls

Refer to the Honda® engine manual for further explanation on engine controls.



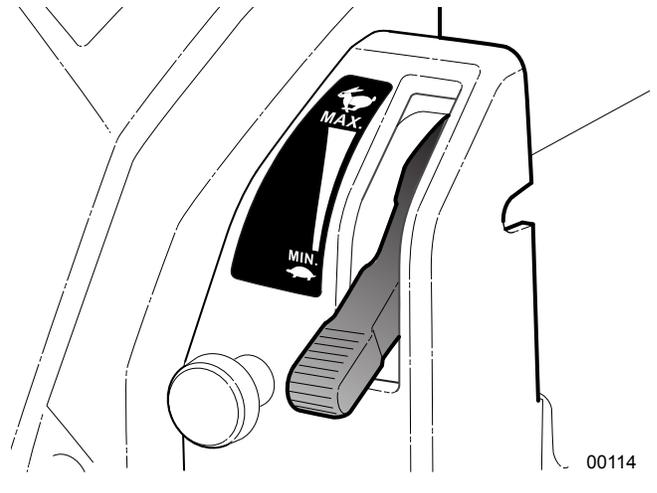
**Fig. 6–Engine Controls**

1. Throttle Lever
2. Choke Knob
3. Engine Start Switch
4. Low Oil Level Alert Indicator
5. Engine Hour Meter

### Throttle Lever

The Throttle Lever controls engine speed. Warm up the engine before putting the chipper to work. The throttle lever should be at the MAX position during chipper operation.

- Pull the lever up to increase engine speed.
- Push the lever down to decrease engine speed.

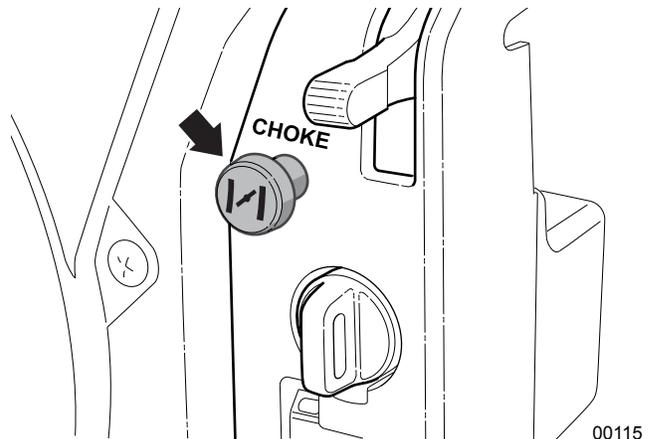


**Fig. 7–Throttle Lever**

### Choke Knob

The Choke Knob is used as a starting aid when the engine is cold. Pulling the knob out supplies a richer fuel mixture to aid the engine in starting.

- Pull the knob out to apply (close) the choke when starting a cold engine.
- Push the knob in gradually to turn off (open) the choke as the engine warms.



**Fig. 8–Choke Knob**

## Ignition Switch

The Ignition Switch has three positions—OFF, ON, and START.

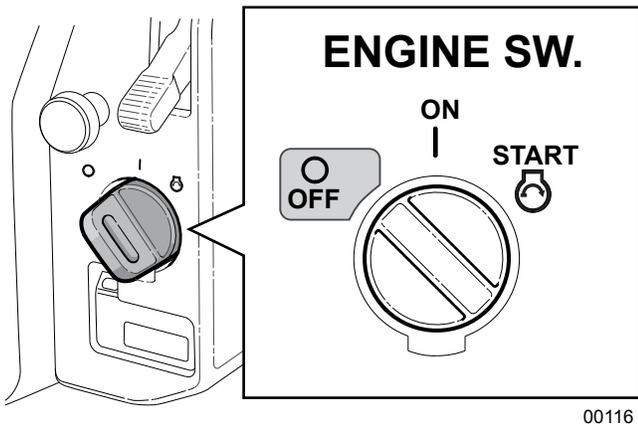


Fig. 9—Engine Start Switch

- **OFF** – In the OFF position, there is no power to the engine and fuel supply is turned off. Turn the switch fully counterclockwise to shut the engine off.
- | **ON** – In the ON (run) position, the fuel supply solenoid supplies fuel to the engine. The machine operates in this position.
- Ⓚ **START** – In the START position, the starter engages. When released, the switch returns to ON.

## Engine Hours and Oil level Alert

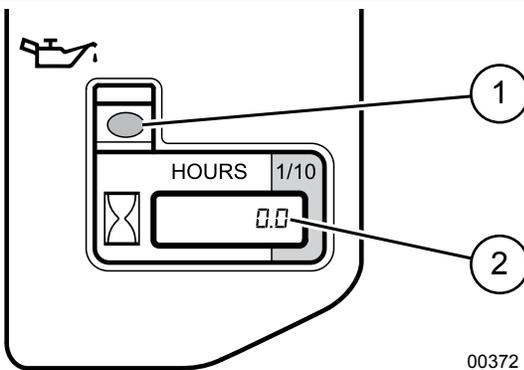


Fig. 10—Engine Hours and Oil Level Alert

1. Engine Oil Level Alert Indicator Light (Red)
2. Engine Operating Hours

Refer to the engine manual for further information.

## 5.2 BXMT4238 Engine Controls

Refer to the Kohler® engine manual for further explanation on engine controls.

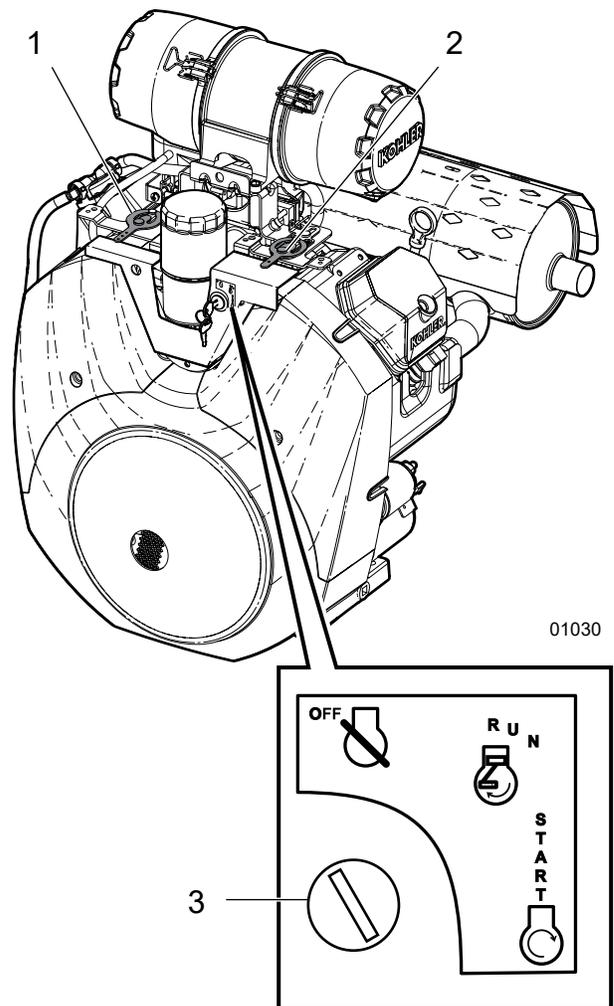
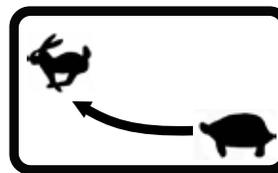


Fig. 11—Engine Controls

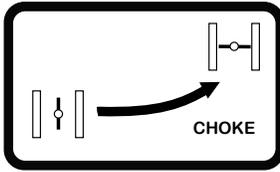
1. Throttle Lever
2. Choke Lever
3. Ignition Switch



### Throttle

This lever controls engine speed. Slide the lever to the left to increase engine speed and right to decrease.

### Choke



This left/right slider controls the position of the choke. Slide the choke to the right to close the choke for starting when the engine is cold. Slide the knob to the left to open the choke as the engine warms. Always slide the choke fully to the left when operating the machine.

### Ignition Switch

The BXMT4238 ignition switch has three positions—OFF, RUN, and START.



**OFF** – The engine is off in the OFF position. Turn the switch counterclockwise to OFF to stop the engine.



**RUN** – In the RUN position, the fuel supply solenoid supplies fuel to the engine. The machine operates in this position.

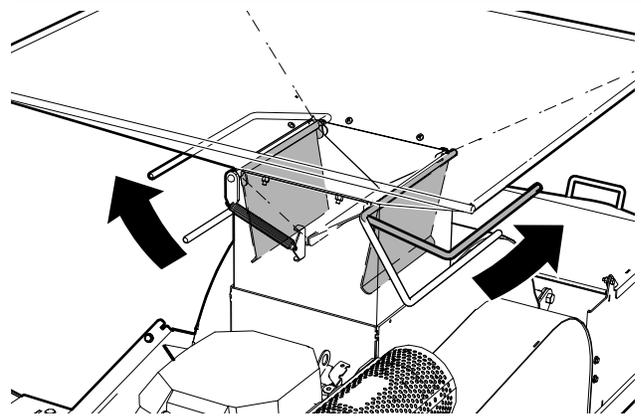


**START** – In the START position, the starter engages. When released, the switch returns to RUN.

### 5.3 Shredder Feed Gate Lever

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. BXMT4224 and BXMT4238 have dual gates. BXMT3209 and BXMT3213 have a single gate with levers on each side.



01032

Fig. 12—BXMT4224 Feed Gate Levers

### 5.4 Discharge Chute

The discharge chute can rotate 360°. A spring-loaded latch handle locks it in position when released.

Lift the latch handle 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.

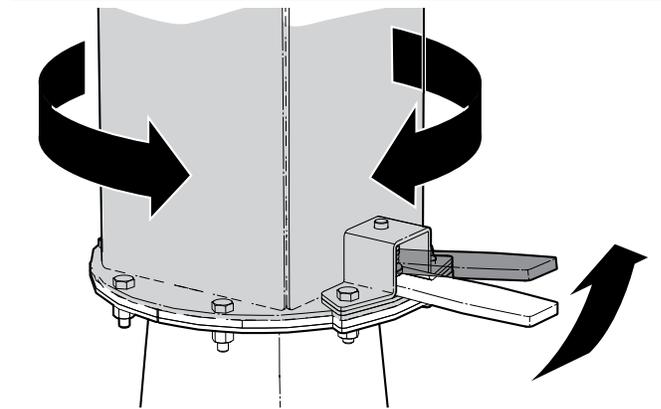
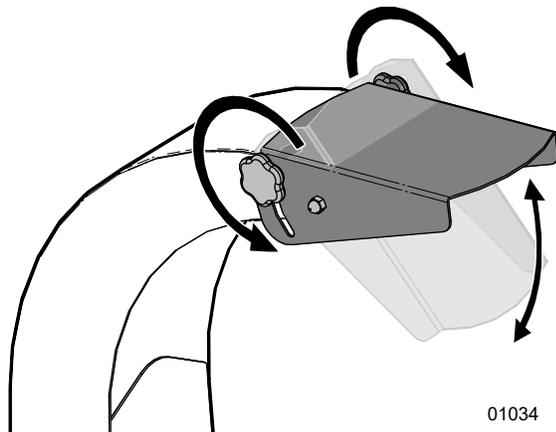


Fig. 13—Discharge Chute Rotation

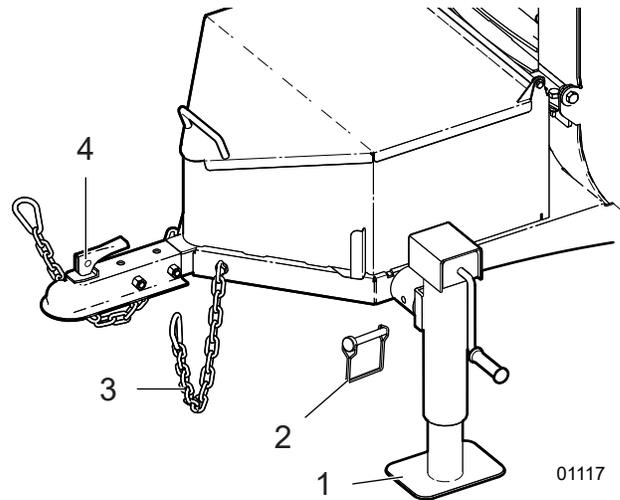
## 5.5 Hood Deflector



**Fig. 14**–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.

## 5.6 Hitch Coupler



**Fig. 15**–Hitch Coupler

- |                  |                  |
|------------------|------------------|
| 1. Trailer Jack  | 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, lock the hitch coupler over the ball on the tow vehicle and insert the snap lock pin.
- Raise the jack stand leg and rotate to its horizontal position. Insert the snap lock pin.
- Cross the safety chains underneath the hitch coupler and attach them to the vehicle.

## 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. Remove ignition key (if equipped).
- 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. Open the fuel valve. See *page 43*.
3. Check fuel level. See *page 27*.
4. Check the engine air cleaner. See *page 36*.
5. Review Operating Safety.
6. Clear the area of bystanders.
7. Make sure each operator is trained and familiar with the set up and operation of the wood chipper.
8. Perform the Pre-operation Checklist.
9. 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.
10. Leave the chipper attached to the tow vehicle if extra stability is required. Set park brake on tow vehicle.
11. Lower the front jack stand. Insert snap lock pin.
12. Direct discharge chute away from the operator.

### 6.2.1 Pre-Operation Checklist

Check the following each time the wood chipper is used:

| <b>Pre-operation Checklist</b>   |  |
|--|---|
| 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, Checking

**Check the fuel level daily.** Starting with a full tank helps to eliminate or reduce operating interruptions for refueling.

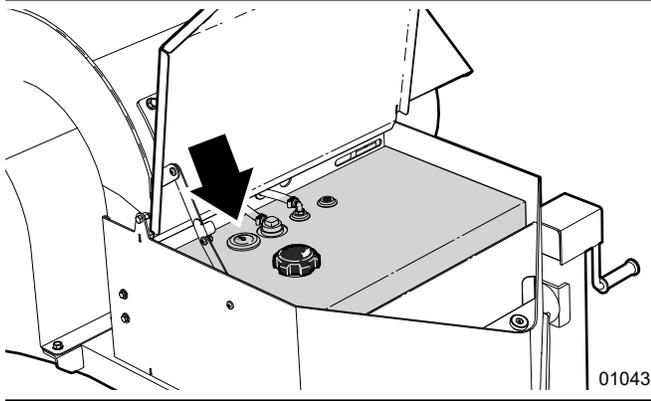


Fig. 16—BXMT4224 and BXMT4238 Fuel Tank

Never use stale or contaminated gasoline or an oil/gasoline mixture. Avoid getting dirt or water in the fuel tank.

### 6.3.1 Refueling

**Fuel tank capacity is 4 US gal (25 L).** Avoid running the tank dry.

#### **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, Checking

**Check engine oil level daily.**

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 without screwing it into the filler neck. 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. Screw in the oil level dipstick securely.

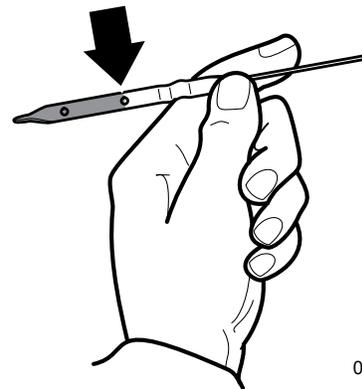


Fig. 17—Checking Engine Oil Level

## 6.5 Starting the Engine

### **WARNING!**

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

Never operate 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. Open the fuel valve. Rotate it so it is in-line with the fuel hose.



Fig. 18–Fuel Valve Open

2. Move the choke to ON (closed) if the engine is cold.
3. Move the throttle to 1/4 position. (Placing the throttle any higher could cause the centrifugal clutch to engage and stall a cold engine.)
4. Turn the ignition switch to START to start the engine. Release it when the engine starts.
5. Run the engine for a few minutes to allow it to warm. Gradually open the choke.
6. Slowly increase the engine speed to engage the clutch and start the rotor.
7. Increase throttle setting to maximum speed for operation.
8. Ensure that the rotor is up to speed, then start feeding material into hopper.

## 6.6 Stopping the Engine

1. Stop feeding material into the hopper and allow machine to clear out.
2. Slow engine speed to idle.
3. Turn ignition switch OFF.

### **CAUTION!**

Risk of injury from rotating parts. Wait for all parts to stop moving before attempting to access the machine. Rotor continues to turn for a few minutes after the engine has stopped.

W025

## Emergency Stopping

If an emergency occurs, immediately turn engine ignition OFF.

Correct emergency before restarting engine and resuming work.

## 6.7 Chipping Operation

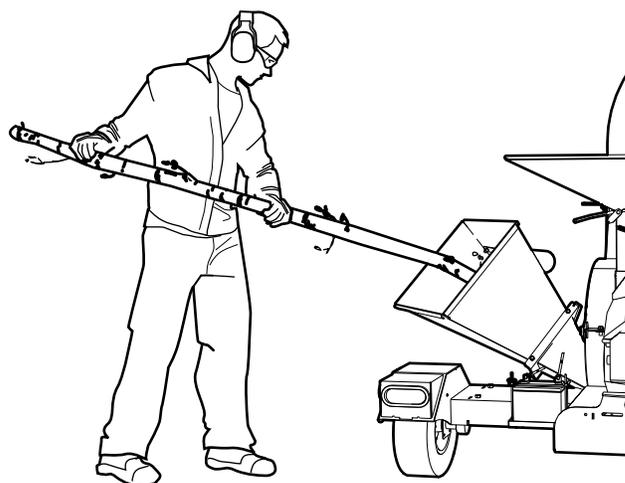


Fig. 19–Chipper Operation

### **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

## Chipper / Shredder Capacity

| Model    | Chipper    | Shredder  |
|----------|------------|-----------|
| BXMT4224 | 4" (10 cm) | 2" (5 cm) |
| BXMT4238 | 4" (10 cm) | 2" (5 cm) |

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

### **WARNING!**

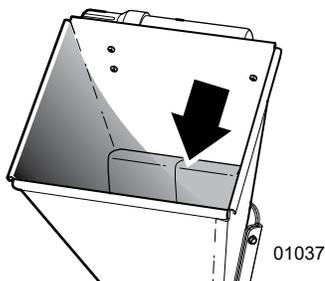
**Never reach into the feed hopper. Doing so risks hands getting caught. Use a stick or branch to push in any material that does not move on its own.**

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

W004



- 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.

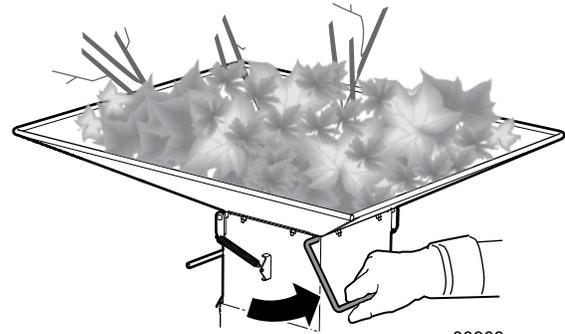


01037

**Fig. 20**–Feed Hopper Safety Curtain

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

## 6.8 Shredder Operation



00903

**Fig. 21**–Shredder Feed Control Handles

The shredder has two feed gates with handles on each side of the hopper. Pull up on the handle to open the feed gate.

Leafy/wooden material—fill up the feed hopper. Pull up on the feed control handle to open the feed gate. You can control how much and how fast the material is delivered into the shredder by varying the gate opening.

Small pieces of wood material—place into the hopper and then open the gate. Close the gate after the material enters the shredder.

Large, bushy, bulky material—fill the hopper and open the gate. Most of the time the shredder rotor pulls it in. If the shredder begins to slow down, close the gate and let the shredder get back up to speed, then reopen the gate.

### **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



- 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.

**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

- Release the handle so the gate closes. Ensure the gate is closed between feeds to keep flying material contained in the shredder housing. Do not prop open the gate.

## 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. Check wheel nut torque.
3. Check tire pressure. Refer to tire sidewall and inflate as required.
4. Check drive belt alignment. Re-align if required. See *page 37*.
5. Check belt tension. Adjust if required. See *page 37*.
6. Visually 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 blades. Adjust as required. See *page 40*.
8. Check for entangled material. Remove all entangled material before resuming work.
9. Check torque on fasteners and hardware.

### After 8 hours of operation:

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

## 6.10 Clearing a Plugged Chipper

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. Be sure all the material is out, and 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 material loose jammed into the discharge hood. Do not allow anything to remain in this area.
4. Try restarting to see if the jam is cleared.

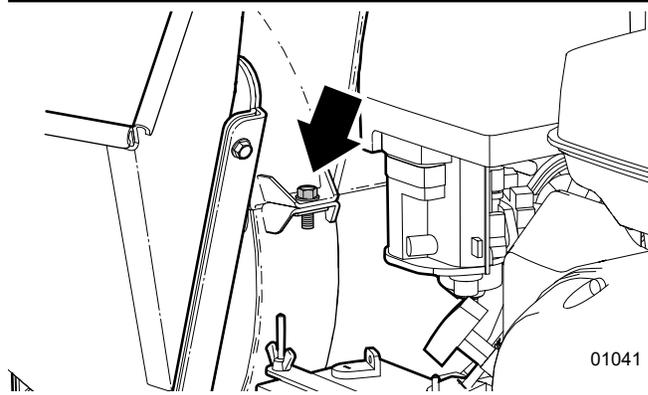
**If the chipper is still plugged, the jammed material must be removed by hand.**

**CAUTION!**

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

W003

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



01041

**Fig. 22**—Upper Rotor Housing Bolt (typical)

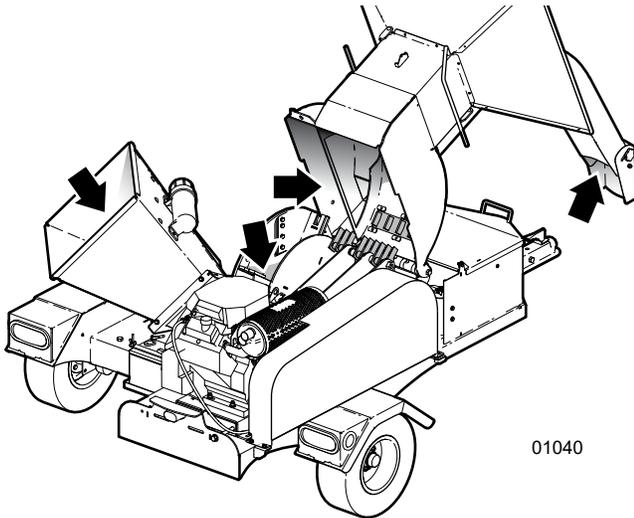
7. Remove jammed material from inside the chipper rotor and shredder compartment.
8. Clean out the discharge area rotor paddles.

9. Be sure to turn the rotor by hand to be sure there is nothing jammed between the rotor and stationary blades.
10. Close and secure the rotor housing.
11. Check that everyone is clear of machine before restarting engine.

**! WARNING!**

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

W001



01040

Fig. 23–Clear out areas inside of chipper

## 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 *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.

| <b>Every Use</b>                               |  |
|--|--|
| Check engine oil and fuel levels.              |  |
| Clear out any entangled material from chipper. |  |

| <b>Every 8 hours or Daily</b>        |                                 |
|--------------------------------------|---------------------------------|
| Perform Pre-operation check.         | See <i>page 26</i>              |
| Check engine air filter.             | Refer to <i>engine manual</i> . |
| Check shredder blade function.       | —                               |
| Observe proper drive belt operation. | See <i>page 37</i>              |

| <b>Every 50 hours or Annually</b> |                    |
|-----------------------------------|--------------------|
| Check rotor blade sharpness.      | See <i>page 39</i> |
| Check ledger knife sharpness.     | See <i>page 40</i> |
| Check shredder blade sharpness.   | See <i>page 42</i> |
| Lubricate pivot points, hinges.   | —                  |

| <b>Every 100 hours or Annually</b>                         |  |
|--|--|
| Grease rotor bearings.                                     | See <i>page 35</i>                       |
| Fuel Filter  | See <i>page 43</i>                       |
| Check tire pressure.                                       | Refer to specification on tire sidewall. |
| Clean wood chipper. Remove any entangled material, debris. | —  |
| Check drive belt tension.                                  | See <i>page 37</i>                       |

## 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.

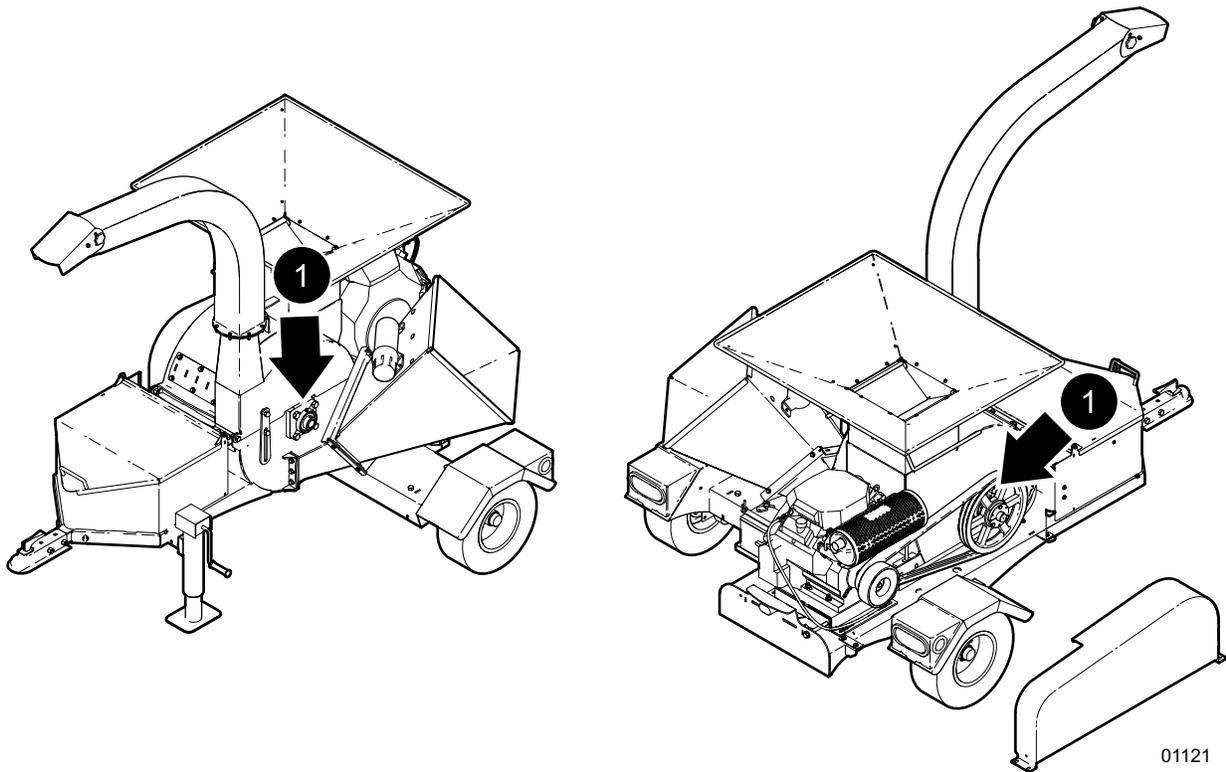


Fig. 24–Grease Points

## 7.5 Engine Air Cleaner

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

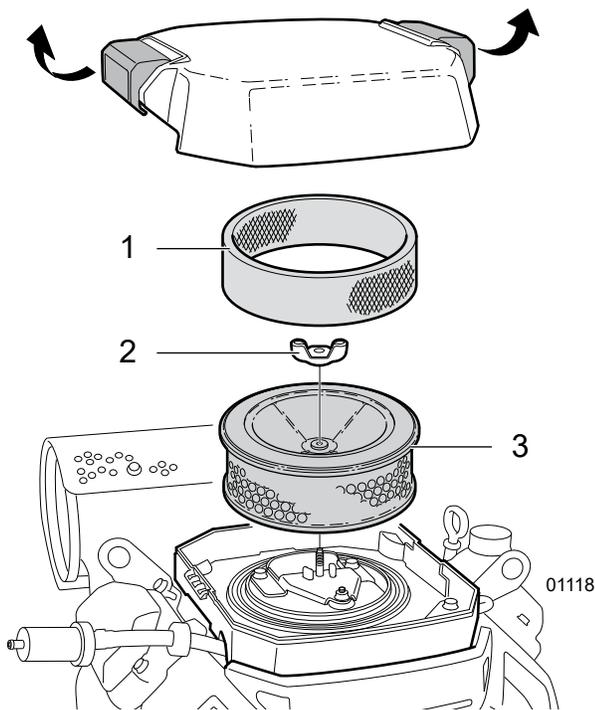
 **NOTE:** Refer to the engine manual for information on servicing the air cleaner.

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.

### Inspection–BXMT4224

- To inspect the filter elements, remove the air cleaner cover.
- Clean or replace dirty filter elements. Always replace damaged filter elements.



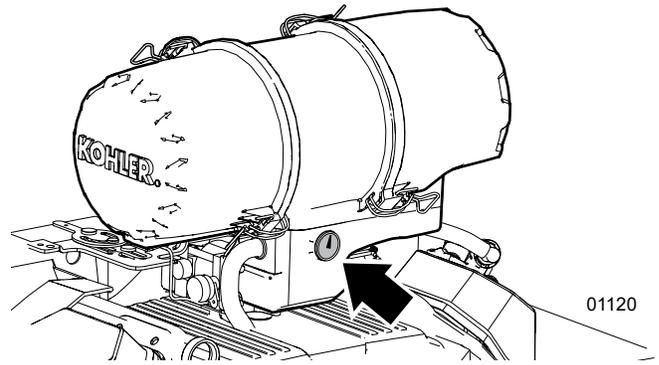
**Fig. 25–BXMT4224 Engine Air Cleaner**

1. Foam Filter Element
2. Wing nut
3. Paper filter Element

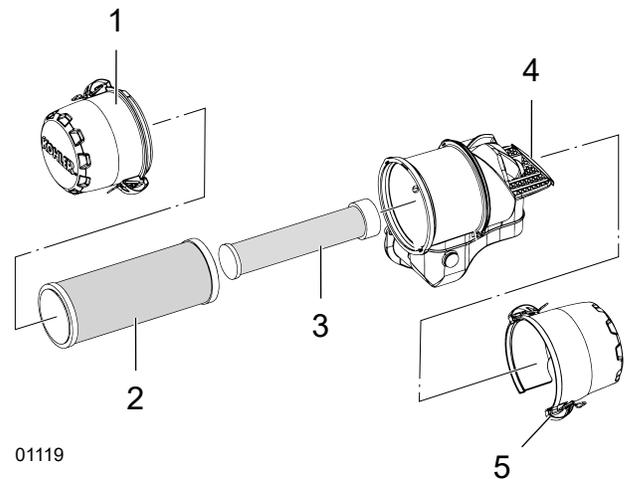
### Inspection–BXMT4238

The BXMT4238 air cleaner has a restriction indicator on the side of the housing to indicate filter cleanliness.

- To examine the air filter elements and inlet screen, remove the end caps.
- Clean or replace dirty filter elements. Always replace damaged filter elements.



**Fig. 26–BXMT4238 Air Filter Restriction indicator**



**Fig. 27–BXMT4238 Engine Air Cleaner**

1. End cap
2. Element
3. Inner Element
4. Inlet Screen
5. Retaining Clip

## 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.

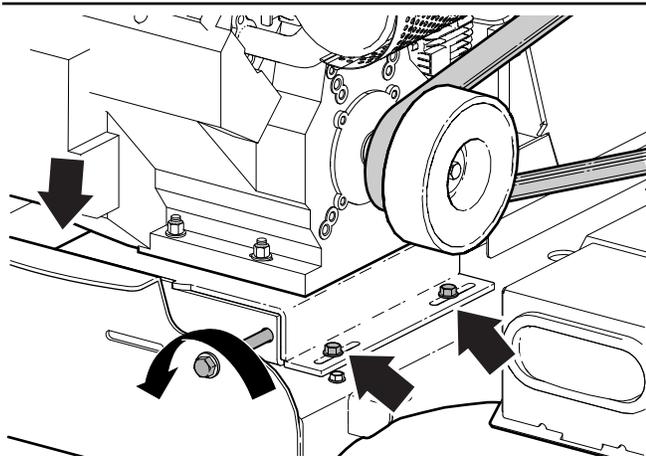


Fig. 28—Drive Belt Tension Adjuster Bolt

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.

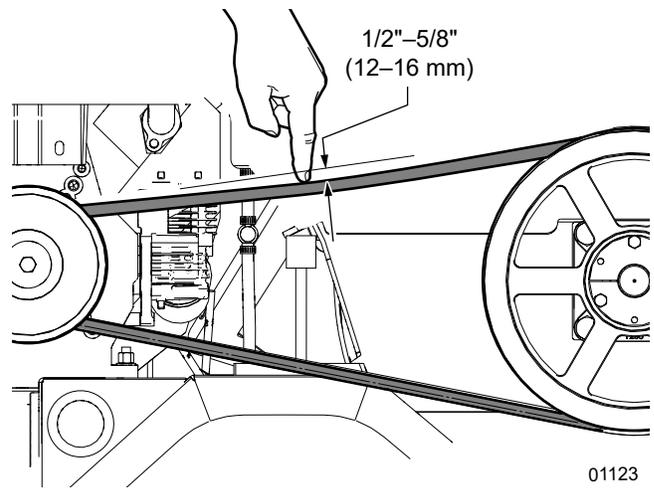


Fig. 29—Rotor drive belt tension

7. Turn adjuster accordingly. Be aware of belt alignment when adjusting belt tension. See *Alignment* to follow.
8. When belt tension is correct, tighten all four engine mount bolts.
9. Reinstall the belt shield.
10. Recheck belt tension after 10 hours of operation.

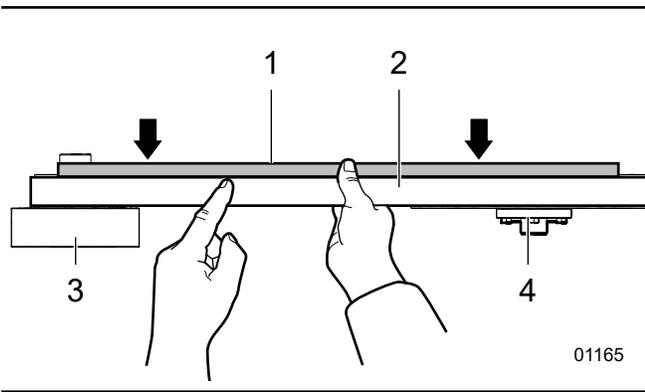
### 7.6.1 Alignment

**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.



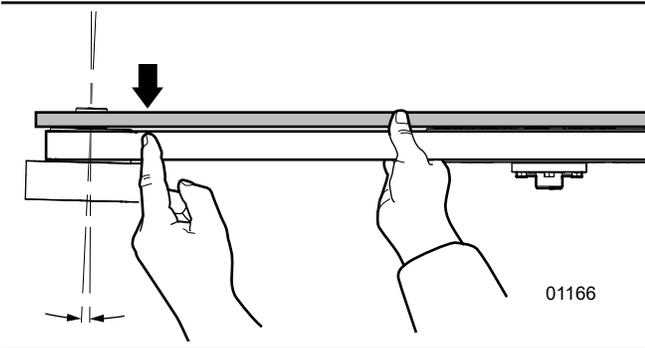
**Fig. 30—Drive Belt Alignment**

- 1. Straight Edge
- 2. Drive Belt
- 3. Engine Clutch
- 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.

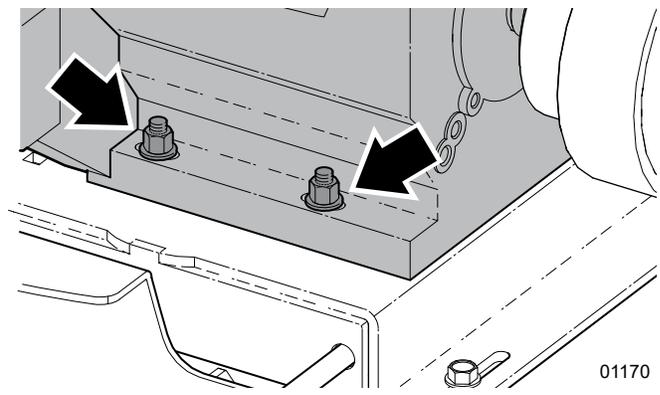
### Engine Mount Misalignment

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



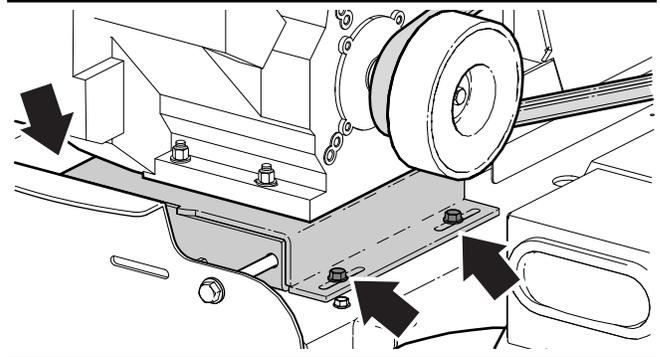
**Fig. 31—Engine Mount Misalignment**

1. First, make sure the bolts fastening the engine to the mount are tight. Make sure the engine is square to the base and the bolts are properly torqued to **33 lbf•ft (45 N•m)**.



**Fig. 32—Engine bolts**

2. Loosen the four bolts on the engine mount to the chipper frame.

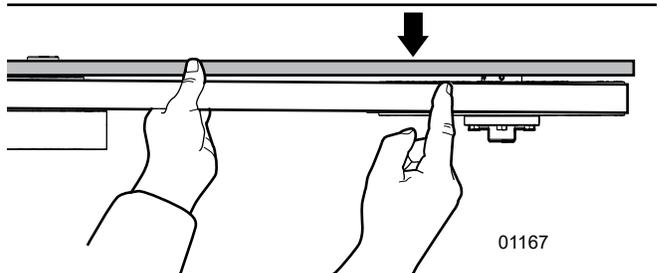


**Fig. 33—Engine Mount Bolts**

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

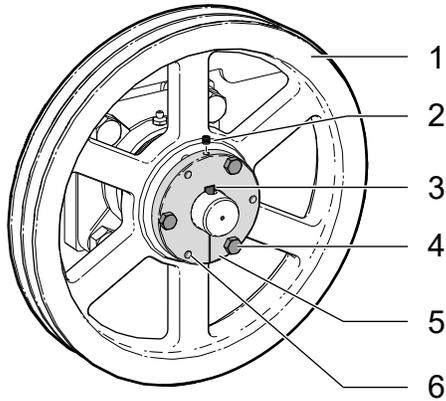
### Rotor Sheave Misalignment

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



**Fig. 34—Rotor Sheave Misalignment**

1. Remove the drive belt.



**Fig. 35**—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 (6).
4. Turn in the 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.

### Rotor Blades, Changing



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

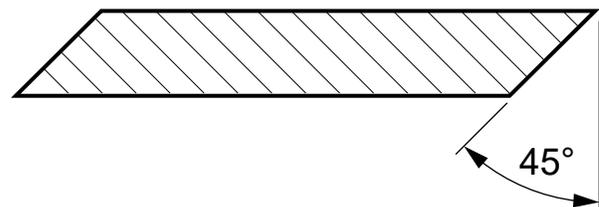
W032

### 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.



01097

**Fig. 36**—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)**.

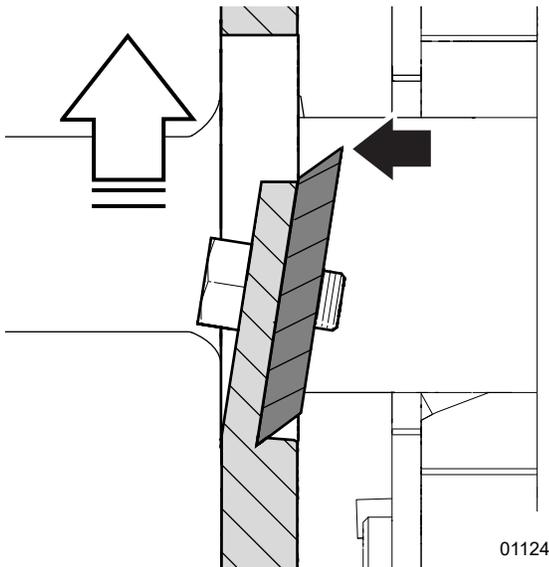


Fig. 37—Rotor blade leading edge outward

**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 performance daily. Check the ledger knife sharpness every 50 hours.**

The ledger knife is bolted inside the lower rotor housing assembly. As the rotor turns, material fed into the chipper is sheared off at the ledger knife by the rotor blades.

When the corner of the ledger knife facing the rotor blade rounds over, the blade can be removed and re-installed with a different corner facing the rotor blade. Once all four corners have been rounded, remove the knife to sharpen or replace it.

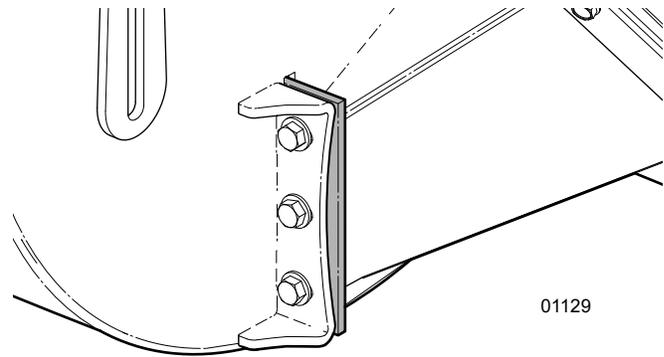


Fig. 38—Ledger knife inside lower rotor housing

To obtain the best chipper performance, check the clearance between the rotor blade and stationary ledger blade every 50 hours.

### Adjusting Clearance

Use the ledger setting gauge to check knife clearance. **The thickness of the gauge is the correct ledger blade clearance.** If spacing is in excess of the gauge thickness, adjust the clearance. If one is not available, set the clearance to 1/32–1/16" (1 – 1-1/2 mm).

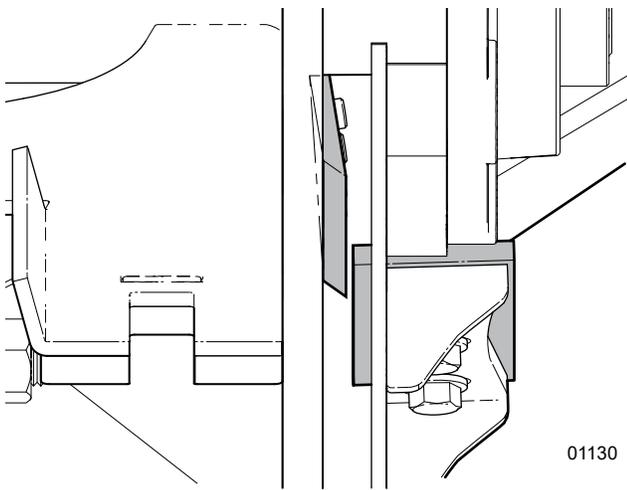
1. Open the upper rotor housing.



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

W032

2. Turn the rotor by hand so that one rotor blade edge is next to the ledger knife.
3. Slide the end of the ledger gauge down between the rotor blade and the ledger knife.



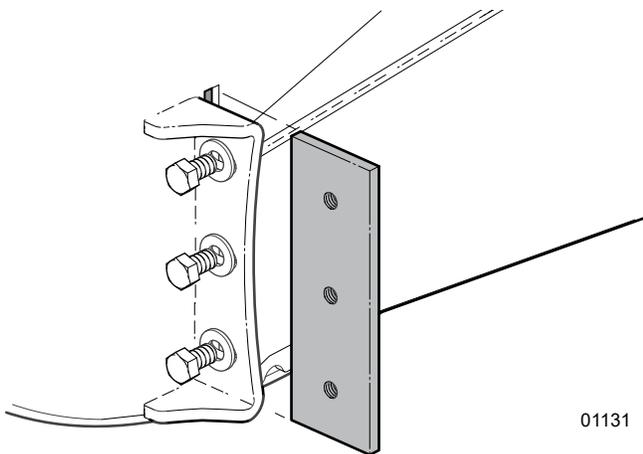
01130

**Fig. 39**—Checking ledger knife clearance

4. Turn the rotor past the ledger knife with the gauge inserted between them to check clearance. The gauge should be tight. Check both knives.
5. Loosen the bolts on the outside of the ledger knife support.
6. Slide the ledger knife firmly up against the gauge inside the rotor housing.
7. Remove the ledger knife gauge and tighten the bolts.
8. Verify clearance before tightening.

## Sharpening

1. Remove the three bolts holding the ledger knife in place. Pull the knife out of the lower housing.



01131

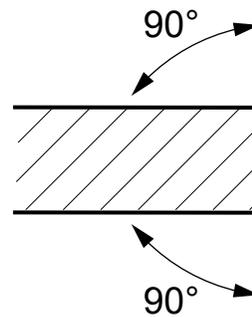
**Fig. 40**—Changing Ledger Knife

2. Rotate the ledger knife or replace it. All four corners of the knife can be used. Reverse the above steps to reinstall the knife.

In the event all four corners of the blade have rounded over,

remove the blade to sharpen it.

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



01098

**Fig. 41**—Sharpening Ledger Knife

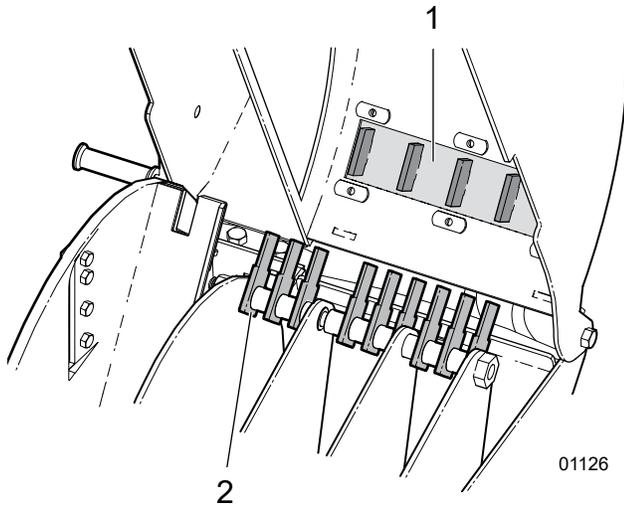
4. Reinstall the blade and set proper clearance. Tighten bolts to proper torque setting.

## 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. 42**–Chop Block in Rotor Housing

1. Chop Block
2. Shredder Knives

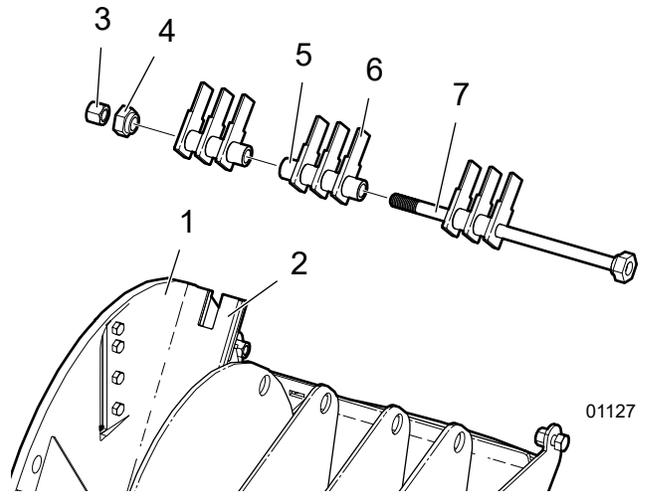
## 7.10 Shredder Knives

**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. 43**–Rotor Assembly

1. Rotor
2. Rotor Paddle
3. Locknut
4. Bushing
5. Spacer
6. Shredder Knife
7. Hammer Retainer Pin

## 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.**

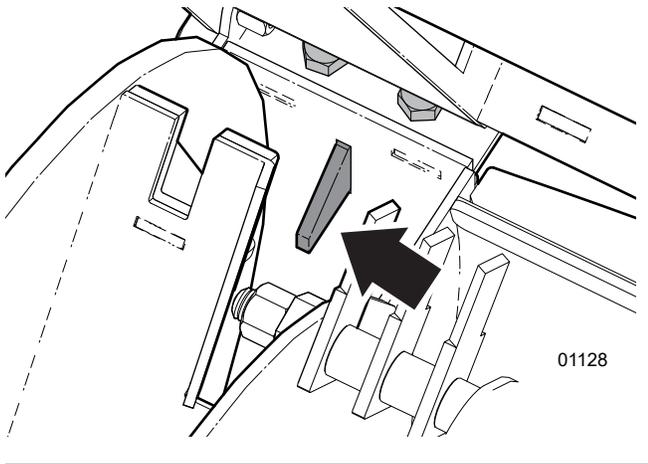
6. Tighten the hammer retainer pin nut. Make sure the knives rotate freely.
7. Repeat steps for second and third sets of shredder knives.

## 7.11 Twig Breaker

**Inspect the twig breaker for damage, bent or missing teeth every 50 hours.**

The twig breaker is located inside the lower rotor housing. Material in the chipper is broken up into smaller pieces as the discharge paddles rotate past it.

A damaged or worn twig breaker should be replaced.



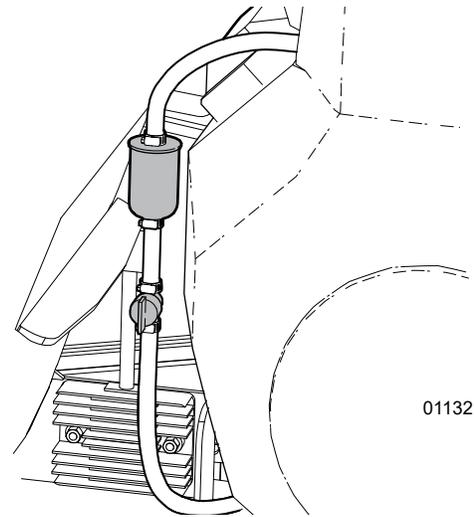
**Fig. 44**—Twig Breaker

## 7.12 Fuel Filter

The fuel filter is located on the back side of the engine. **Replace the fuel filter every 100 hours or annually.**

Allow the engine to cool before beginning.

1. Turn the fuel supply off at the fuel shut-off valve.
2. Remove the gear clamps on either side of the filter. Pull it off the hoses and install a new one.
3. Install and tighten the gear clamps. Turn the fuel supply back on.



**Fig. 45**—Engine Fuel Filter and Shut-off Valve

## 7.13 Electrical System

### General

When assembling or replacing wire harnesses, apply a thin coating of silicone dielectric grease to the harness connectors.

Clean off any corrosion or loose particles, then apply a small amount to the surfaces of the connectors where they meet. The grease helps to stop any possibility of future corrosion.

Reassemble the connection. Wipe off any grease that squeezes out.

## 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 engine owner's manual.

| Problem  | Cause  | Solution   |
|--|--|--|
| <b>Rotor does not turn.</b>                        | 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.  |
| <b>Material feeding in too slow.</b>               | Engine or rotor speed to 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.   |
| <b>Unusual machine vibration while operating.</b>  | 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 46</i> .                                    |
| <b>Mulch too Course</b>                            | 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 42</i> .                  |
| <b>Machine requires excessive power or stalls.</b> | 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 30</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 Specifications<sup>1</sup>

| Model                     | BXMT4224                                      | BXMT4238                                      |
|---------------------------|---|---|
| Chipping Capacity         | 4" (10 cm)                                    | 4" (10 cm)                                    |
| Shredding Capacity        | 2" (5 cm)                                     | 2" (5 cm)                                     |
| Chipper Type              | Disc  | Disc  |
| Feed System               | Gravity / Self Feed                           | Gravity / Self Feed                           |
| Shredder Type             | Hammer Mill                                   | Hammer Mill                                   |
| Engine                    | Honda® GX690, 688 cc / 22 hp (16.5 kW)        | Kohler® CH980 / 999 cc / 35 hp (26.1 kW)      |
| Chipper Hopper Opening    | 18" x 18" (45 cm x 45 cm)                     | 18" x 18" (45 cm x 45 cm)                     |
| Chipper Housing Opening   | 4" x 10" (10 cm x 25 cm)                      | 4" x 10" (10 cm x 25 cm)                      |
| Shredder Hopper Opening   | 33" x 40" (84 cm x 102 cm)                    | 33" x 40" (84 cm x 102 cm)                    |
| Shredder Housing Opening  | 11" x 11" (27 cm x 27 cm)                     | 11" x 11" (27 cm x 27 cm)                     |
| Number of Chipper Knives  | 2   | 2   |
| Number of Shredder Knives | 30  | 30  |
| Rotor Diameter            | 25" (64 cm)                                   | 25" (64 cm)                                   |
| Rotor Weight              | 170 lb (77 kg)                                | 170 lb (77 kg)                                |
| Discharge Chute Height    | 64" (163 cm)                                  | 64" (163 cm)                                  |
| Discharge Chute Rotation  | 360°  | 360°  |
| Drive System              | Centrifugal Clutch, Belt Drive                | Centrifugal Clutch, Belt Drive                |
| Engine speed              | 3600 rpm                                      | 3600 rpm                                      |
| Rotor speed               | 1200 rpm                                      | 1200 rpm                                      |
| Tires                     | 6.50 X 8                                      | 6.50 X 8                                      |
| Total Weight              | 1080 lb (490 kg)                              | 1080 lb (490 kg)                              |
| Dimensions (L x W x H)    | 64" x 84" x 64"<br>(163 cm x 213 cm x 163 cm) | 64" x 84" x 64"<br>(163 cm x 213 cm x 163 cm) |
| Fuel Tank Capacity        | 4 US gal (25 L)                               | 4 US gal (25 L)                               |

<sup>1</sup> 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.



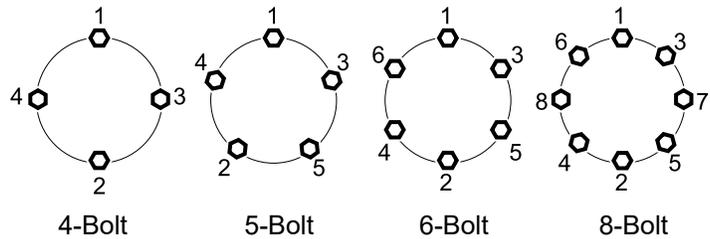
#### WARNING!

**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<br>N•m | 12–20<br>16–26   | 30–35<br>39–45.5 | 45–55<br>58.5–71.5 |
| 12"                  | lbf•ft<br>N•m | 20–25<br>26–32.5 | 35–40<br>45.5–52 | 50–60<br>65–78     |
| 13"                  | lbf•ft<br>N•m | 20–25<br>26–32.5 | 35–40<br>45.5–52 | 50–60<br>65–78     |
| 14"                  | lbf•ft<br>N•m | 20–25<br>26–32.5 | 50–60<br>65–78   | 90–120<br>117–156  |
| 15"                  | lbf•ft<br>N•m | 20–25<br>26–32.5 | 50–60<br>65–78   | 90–120<br>117–156  |
| 16"                  | lbf•ft<br>N•m | 20–25<br>26–32.5 | 50–60<br>65–78   | 90–120<br>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](http://www.wallensteinequipment.com)

# 11. Alphabetical Index

|                                     |          |        |  |          |       |
|-------------------------------------|----------|--------|--|----------|-------|
|                                     | <b>A</b> |        |  | <b>I</b> |       |
| Air Cleaner Inspection.....         |          | 36     | Informative Labels.....                  |          | 6     |
|                                     | <b>B</b> |        |  | <b>L</b> |       |
| Bolt torque.....                    |          | 46     | Ledger Knife.....                        |          | 40    |
| Break-in.....                       |          | 30     | Adjusting Clearance.....                 |          | 40    |
|                                     | <b>C</b> |        | Sharpening.....                          |          | 41    |
| Checking Bolt Torque.....           |          | 46     | Lubricants.....                          |          | 33    |
| Chipper / Shredder Capacity.....    |          | 29     |  | <b>M</b> |       |
| Chipping Operation.....             |          | 28     | Machine Break-In.....                    |          | 30    |
| Chop Block.....                     |          | 41     | Machine Specifications.....              |          | 45    |
| Clearing a Plugged Chipper.....     |          | 30     | Maintenance Decals.....                  |          | 6     |
| Controls.....                       |          | 21     | Maintenance Schedule.....                |          | 34    |
| Discharge Chute.....                |          | 23     |  | <b>O</b> |       |
| Hitch Coupler.....                  |          | 24     | Oil level Alert – BXMT4224.....          |          | 22    |
| Hood Deflector.....                 |          | 24     | Operating Instructions.....              |          | 25    |
| Shredder Feed Gate Lever.....       |          | 23     | Before Startup.....                      |          | 26    |
|                                     | <b>D</b> |        | Chipping Operation.....                  |          | 28    |
| Discharge Chute.....                |          | 23     | Clearing a Plugged Chipper.....          |          | 30    |
| Drive Belt Alignment.....           |          | 37     | Emergency Stopping.....                  |          | 28    |
| Drive Belt Replacement.....         |          | 37     | Fuel Level, Checking.....                |          | 27    |
| Drive Belt, Tensioning.....         |          | 37     | Safety Rules.....                        |          | 25    |
|                                     | <b>E</b> |        | Shredder Operation.....                  |          | 29    |
| Emergency Stopping.....             |          | 28     | Starting the Engine.....                 |          | 28    |
| Engine.....                         |          | 33     | Stopping.....                            |          | 28    |
| Engine Air Cleaner.....             |          | 36     | Storage.....                             |          | 32    |
| Engine Controls.....                |          | 21, 22 | Transporting the Machine.....            |          | 31    |
| BXMT4224.....                       |          | 21     | Before Transporting.....                 |          | 31    |
| Choke Knob.....                     |          | 21     |  | <b>P</b> |       |
| Ignition Switch.....                |          | 22     | Personal Protective Equipment (PPE)..... |          | 8     |
| Throttle Lever.....                 |          | 21     | Pre-Operation Checklist.....             |          | 26    |
| BXMT4238.....                       |          | 22     |  | <b>R</b> |       |
| Choke.....                          |          | 23     | Refueling.....                           |          | 27    |
| Ignition Switch.....                |          | 23     | Removal from Storage.....                |          | 32    |
| Throttle.....                       |          | 22     | Replacing Damaged Safety Signs.....      |          | 17    |
| Engine Fuel.....                    |          | 33     | Rotor Blade Bolt Torque.....             |          | 40    |
| Engine Hours – BXMT4224.....        |          | 22     | Rotor Blade Maintenance.....             |          | 39    |
| Engine Oil.....                     |          | 33     | Rotor Blades, Changing.....              |          | 39    |
| Engine Oil Level, Checking.....     |          | 27     | Rotor Blades, Sharpening.....            |          | 39    |
| Equipment Safety Guidelines.....    |          | 8      | Rotor Drive Belt Tension.....            |          | 37    |
|                                     | <b>F</b> |        |  | <b>S</b> |       |
| Familiarization.....                |          | 19     | Safe Condition.....                      |          | 8, 25 |
| Operator Orientation.....           |          | 19     | Safety.....                              |          | 7     |
| Fluids.....                         |          | 33     | Battery Safety.....                      |          | 9     |
| Foreword.....                       |          |        | Being Prepared.....                      |          | 9     |
| Delivery Inspection Report.....     |          | 4      | Gas Motor Safety.....                    |          | 10    |
| Types of Decals on the Machine..... |          | 6      | How to Install Safety Signs.....         |          | 17    |
| Fuel Level, Checking.....           |          | 27     | Maintenance Safety.....                  |          | 33    |
| Fuel Valve.....                     |          | 28     | Refueling Safety.....                    |          | 9     |
|                                     | <b>G</b> |        | Safe Condition.....                      |          | 8     |
| Gas Motor Safety.....               |          | 10     | Safety Alert Symbol.....                 |          | 7     |
| Grease Points.....                  |          | 35     | Safety Rules.....                        |          | 7     |
|                                     | <b>H</b> |        | Signal Words.....                        |          | 7     |
| Hitch Coupler.....                  |          | 24     | Tire Safety.....                         |          | 9     |
| Hood Deflector.....                 |          | 24     | Why Safety is Important.....             |          | 7     |
|                                     |          |        | Safety Alert Symbol.....                 |          | 7     |
|                                     |          |        | Safety Rules.....                        |          | 7, 25 |

|                                     |    |
|-------------------------------------|----|
| Safety Sign Explanations .....      | 14 |
| Safety Sign Locations .....         | 12 |
| Safety Signs.....                   | 12 |
| Replacing Damaged Safety Signs..... | 17 |
| Safety Sign Explanations.....       | 14 |
| Safety Sign Locations.....          | 12 |
| Safety signs, installing.....       | 17 |
| Safety Training .....               | 8  |
| Serial number.....                  | 5  |
| Service and Maintenance.....        | 33 |
| Chop Block .....                    | 41 |
| Drive Belt Replacement.....         | 37 |
| Drive Belt, Tensioning.....         | 37 |
| Electrical System .....             | 43 |
| Engine Air Cleaner.....             | 36 |
| Fluids and Lubricants.....          | 33 |
| Fuel Filter.....                    | 43 |
| Fuel Filter – Changing .....        | 43 |
| Grease Points.....                  | 35 |
| Ledger Knife – Checking .....       | 40 |
| Maintenance Schedule .....          | 34 |
| Rotor Blades .....                  | 39 |
| Rotor Blades, Changing.....         | 39 |
| Sheave Alignment.....               | 37 |
| Shredder Knives .....               | 42 |
| Shredder Knives, Changing.....      | 42 |
| Twig Breaker.....                   | 43 |
| Shredder Feed Gate Lever .....      | 23 |
| Shredder Knives.....                | 42 |
| Shredder Operation.....             | 29 |
| Sign-off form.....                  | 18 |
| Specifications .....                | 45 |
| Stopping .....                      | 28 |
| Storage.....                        | 32 |

## T

|                                |    |
|--------------------------------|----|
| Transporting the Machine ..... | 31 |
| Troubleshooting Guide .....    | 44 |
| Twig Breaker .....             | 43 |

## W

|                        |    |
|------------------------|----|
| Warranty.....          | 48 |
| Wheel Lug Torque ..... | 47 |





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