EN

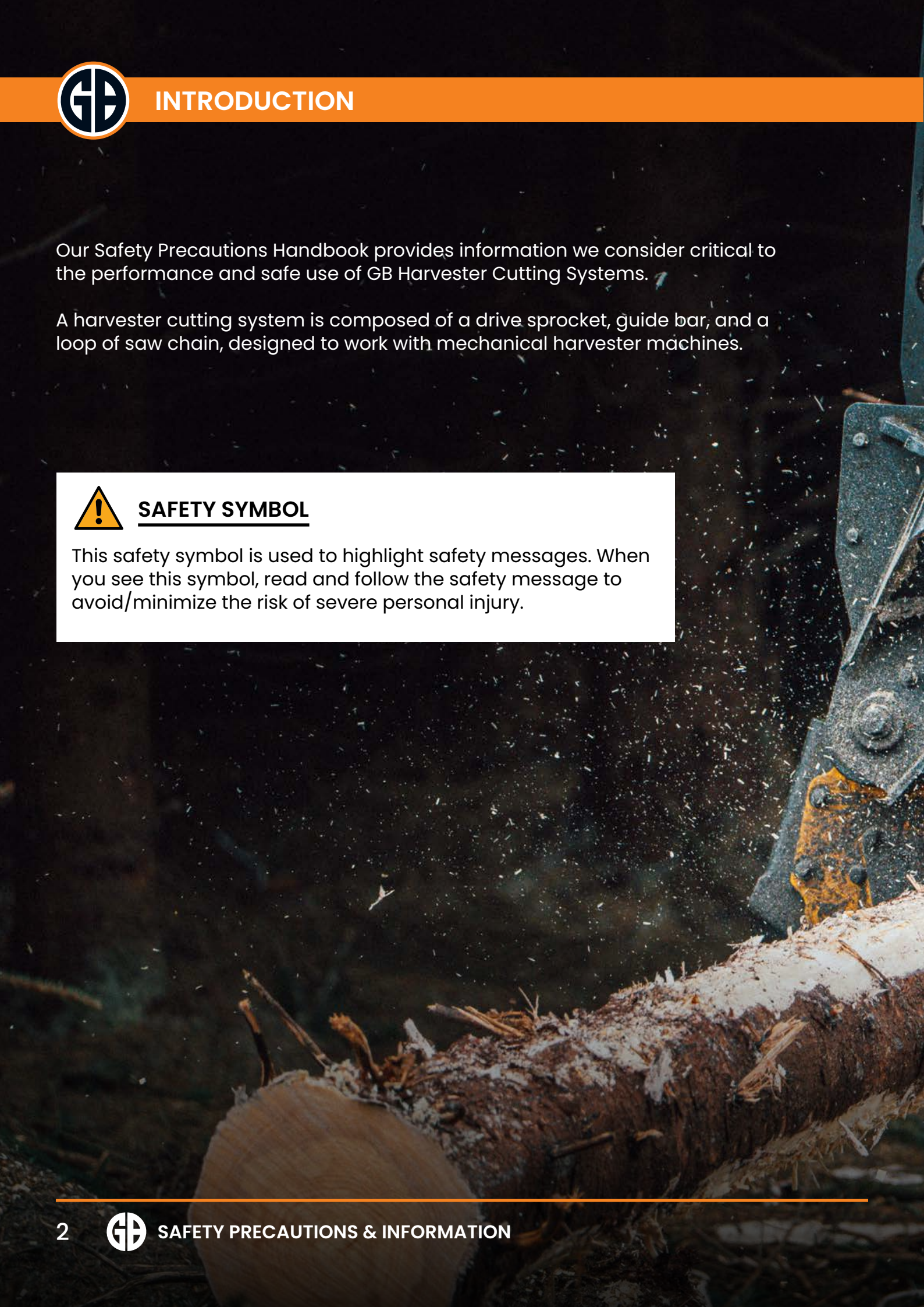
SAFETY PRECAUTIONS & INFORMATION

THE PROFESSIONALS CHOICE

INTRODUCTION

Our Safety Precautions Handbook provides information we consider critical to the performance and safe use of GB Harvester Cutting Systems.

A harvester cutting system is composed of a drive sprocket, guide bar, and a loop of saw chain, designed to work with mechanical harvester machines.



SAFETY SYMBOL

This safety symbol is used to highlight safety messages. When you see this symbol, read and follow the safety message to avoid/minimize the risk of severe personal injury.


Titanium DXV
TOUGH

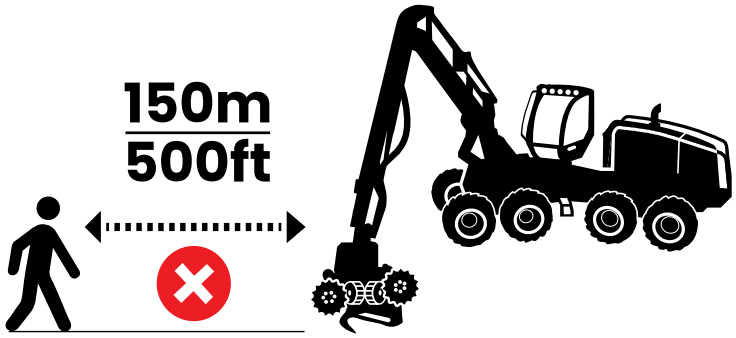
CHAIN SHOT

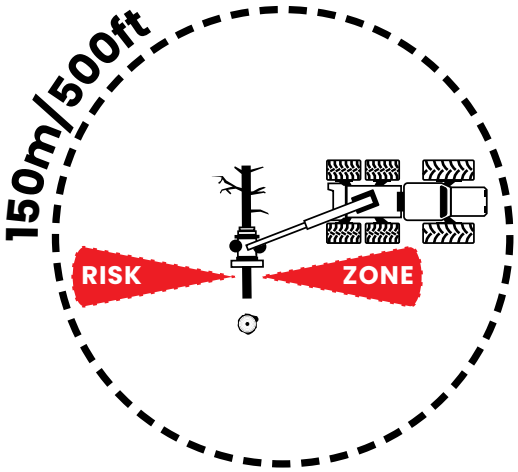
There is risk of serious injury or death to the machine operator, ground personnel and bystanders from chain shot. A Chain Shot Event (CSE) occurs when a piece or pieces of cutting chain from the end of a broken saw chain in mechanized timber harvesting or processing is ejected at a high velocity.

Chain shot typically originates near the drive end of the cutting system but can also originate from the guide bar tip area. Saw chain pieces usually travel in the cutting plane of the guide bar, but can deviate to either side (see illustration below). Although the "Risk Zone" reflects the most likely chain shot path, deflections can occur, substantially expanding where chain pieces may travel.

To minimize risk, operators should keep out of the Risk Zone, ground personnel and bystanders should be at least 150m/500 feet away from cutting operations and out of the Risk Zone.

WARNING: CHAIN SHOT, CHECK MACHINE OPERATORS MANUAL FOR MAINTENANCE OF SAFETY EQUIPMENT





The risk zone is the area in-line with both ends of the cutting system. This area is most at risk of a chain shot event. The Risk zone should never be in-line with the harvester cab or personnel.

To minimize your risk of a chain shot event:

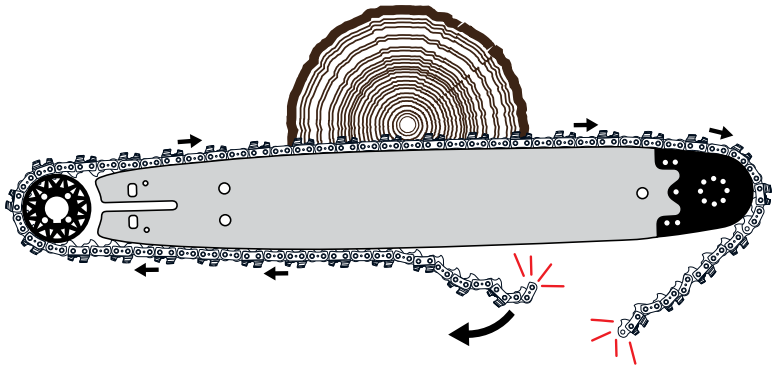
- You should follow the recommendations of your equipment manufacturer and those contained in this handbook.
- Your machine should be equipped with appropriate window enclosures, chain catchers, chain shot guards.

Never use saw chain that has:

- Broken, cracked, or damaged components.
- Excessive saw chain stretch.
- Loose rivet joints (if the rivet rotates, the joints are too loose).

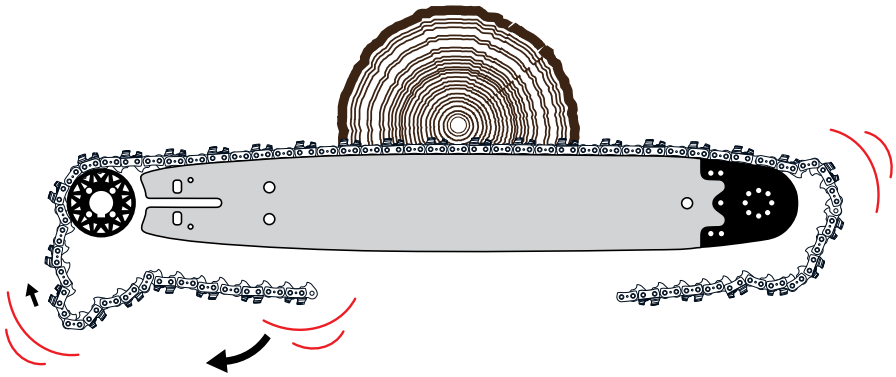
HOW CHAIN SHOT HAPPENS

1. The saw chain breaks

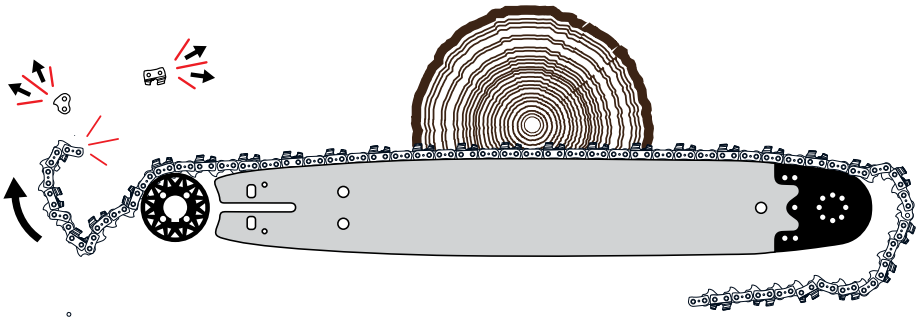


2. After a saw chain breaks, the “free” end of the saw chain begins to whip away from the break.

3. If the saw chain is not contained by the saw box or a chain shot guard, the broken saw chain’s free end can speed up rapidly, carrying immense dynamic energy.



4. At the peak of the whip, saw chain pieces may break loose and be ejected at high speed.



WHAT IS THE CUTTING SYSTEM?

A saw chain-based cutting system comprises a **drive sprocket, guide bar,** and a loop of **saw chain**.

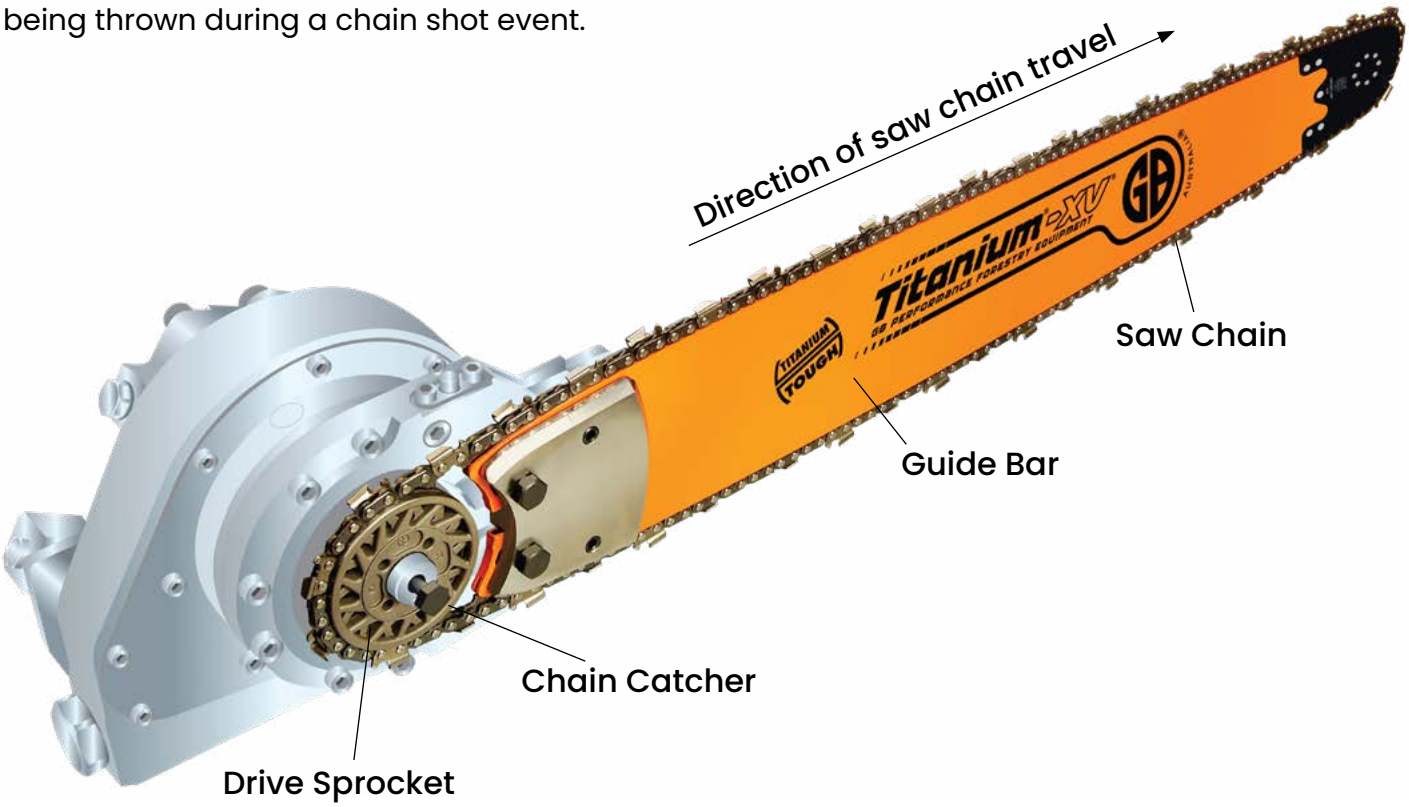
It's crucial for every equipment operator to recognize the safety equipment that should be always present in the saw box. If any of these devices seem damaged or missing, consult your equipment manufacturer for guidance.

CHAIN CATCHER

If the saw chain comes off the bar rail the chain catcher stops the saw chain for being thrown from the saw box. The chain catcher is in line with the drive sprocket.

CHAIN SHOT GUARD

The chain shot guard is part of the saw box it reduces the risk of chain parts or chain loop being thrown during a chain shot event.



INSTALLATION AND BREAK-IN

Different makes or models of saw chains with differing dimensions will wear the guide bar and drive sprocket in a way that matches the chain. When changing brands or models of saw chain, also change the guide bar and drive sprocket and run as a set.

When installing a new chain onto the guide bar, increase the speed gradually for the first 2-4 minutes while cycling the guide bar. Do this until you see lubricant on the tip of the guide bar and chain.

DAILY INSPECTION

At the start of each shift the following should be inspected:

- Cutting system
- Chain catcher
- Chain shot guard

DAILY START-UP

- Enough time must be allowed for the lubricant to reach the cutting system.
- Cycle the cutting system to ensure the lubricant is flowing to tip of the guide bar and chain.

SAW CHAIN

To ensure optimal cutting performance and safety, it's recommended you inspect your saw chain regularly. A sharp and well lubricated chain offers several benefits to the cutting system:

Faster Cutting: A sharp chain cuts through wood more efficiently, reducing cutting time and increasing productivity.

Reduced Wear: Less energy (pressure and time) is required to complete cuts with a sharp chain, resulting in reduced wear on the entire cutting system, including the guide bar and chainsaw components.

Increased Efficiency: A sharp chain will cut more efficiently so it will have less load on the machine causing less fuel to be used.

The frequency of saw chain replacement may vary depending on factors such as the type of timber being cut, terrain conditions, and environmental factors. However, if cuts begin to slow down, it's recommended to replace the chain to maintain optimal cutting performance. Replacing a dull chain for a sharp one can significantly improve cutting efficiency and overall productivity. This will also extend the lifespan of your cutting system, ensuring safe and efficient operation and minimize breakages.

OPERATING PARAMETERS	TITANIUM LX .404" SAW CHAIN
Guide Bar & Saw Chain Oil	3 ml/cut or average 8litres/8hour shift
Power at saw motor kw	15kW Min - 50kW Max
Force on guide bar to tension saw chain	490N / 50kg
Saw Chain Speed	Recommended 40m/s (15m/sec Min - 40m/sec Max)
Guide Bar feed load at centre	Recommended 700N (100N Min - 900N Max)

CHAIN TENSION

Correct chain tension on the saw guide bar is crucial for safe and efficient operation. Ensure the chain is securely seated on the guide bar, regularly check and adjust chain tension according to manufacturer guidelines to maintain optimal operation and prolong the lifespan of your cutting system. Exceeding recommendations will shorten your cutting system's life of operation.

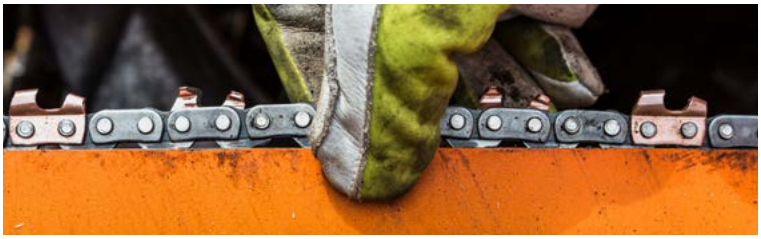
The recommended amount of force applied by the guide bar to tension saw chain:

- **.404" pitch** saw chain is 490 N or 50kg
- **3/4" pitch** saw chain is 668 N or 68kg

CHECKING TENSION

To ensure proper tension, grasp the saw chain at the mid-span of the guide bar and pull it away from the bar rails.

The chain should come out of the bar groove approximately 3mm and snap back when released.



MANUAL TENSIONING SYSTEMS

Ensure the saw chain is tight enough to pull the chassis firmly against the guide bar. Regularly check tension, only doing so when the chain is cool to prevent damage. When shutting down or taking breaks, relieve tension to prevent damage as the chain cools and contracts.

AUTOMATIC TENSIONING SYSTEMS

Automatic systems are effective in maintaining proper tension. These systems compensate for the chain lengthening at high speeds and adjust as needed when set up correctly.

Proper force applied to the guide bar is crucial; refer to our Technical Data Tables for recommendations.

OIL / LUBRICATION

8l / 8hr

The cutting system operates in demanding and variable conditions and depends on suitable lubrication to reduce wear and extend its service life. Both bar & chain oil and grease are suitable and can be effective if applied correctly.

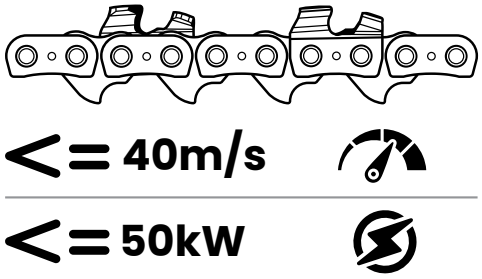
Regular inspection of bar and chain is required to determine the effectiveness of the lubrication. The choice of lubrication may vary depending on climate and other cutting conditions. Different lubricants and mixtures will have varying stickiness and viscosity, requiring continual monitoring and adjustment to suit changing conditions.

The key lubrication areas are the rivets on the chain and the sprocket bearing at the end of the guide bar. Therefore, the entire cutting system should be inspected for the presence of lubrication.

CHAIN SPEED

WARNING:

At no time should you exceed recommended chain speed, this could increase the potential for chain shot events and potential injury or death. Exceeding recommendations may result in damage and shorter service life of your cutting system.



- .404” Recommended chain speed 40m/s

PROBLEMS WITH HARVESTER SAW-CHAIN:

Environmental conditions can effect the cutting system performance:

- Dirt
- Rocks
- Snow/Ice
- Poor lubrication
- Cutting with a blunt chain

Common causes of saw chain jumping off the guide bar are:

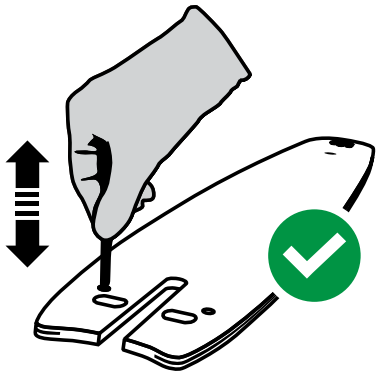
- Poor hydraulic setup on the automatic tensioner
- Incorrect manual tension
- Incorrect bar mount drive sprocket selection
- Bar and sprocket alignment
- Chain design
- Worn drive sprocket
- Excessive chain stretch
- Difficult cutting conditions

WARNING: To reduce risk of injury, always use personal protective equipment (gloves and safety glasses)

GUIDE BAR MAINTENANCE TASKS

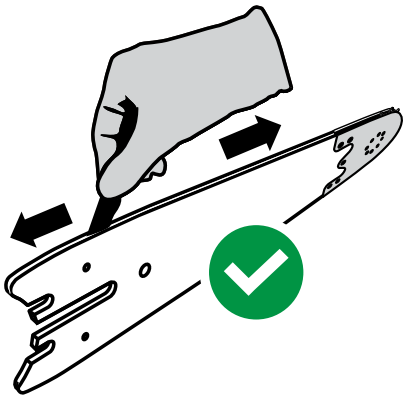
CLEAN OIL HOLE

Clean guide bar oil holes making sure they are not blocked and oil can flow freely.



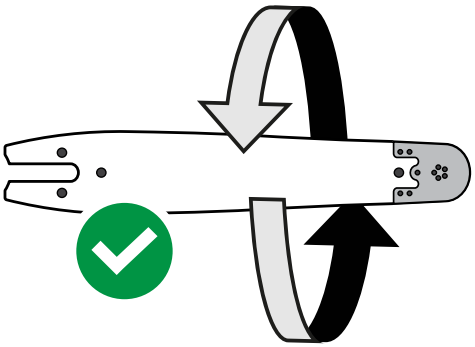
CLEAN GROOVE

Check and clean guide bar groove removing any debris, allowing the saw chain to run smoothly.



TURN BAR OVER

Turn your guide bar over to equalize bar wear, this will extend your guide bar life.



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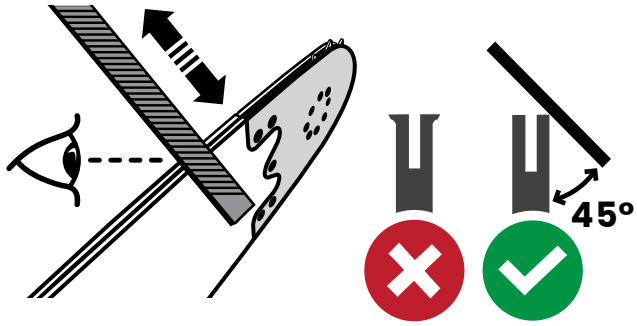
GUIDE BAR MAINTENANCE TASKS

FILE OFF BURRS

Regularly inspect the edges of your guide bar for any burrs or rough spots. Burrs can develop from normal wear and tear during cutting operations. Burrs can be dressed with a file to remove and maintaining a smooth and even surface.

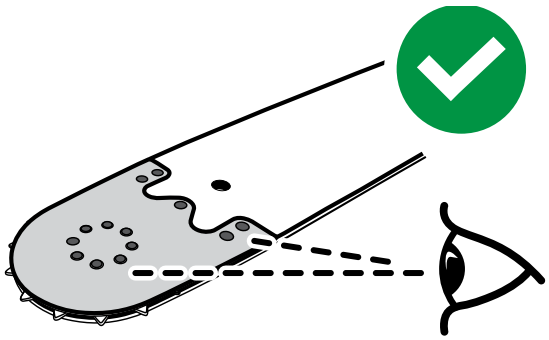
CLEAN DEBRIS:
Once you have filed off the burrs, clean the guide bar thoroughly to remove any metal shavings or debris allowing the saw chain to run smoothly.



CHECK RIVETS

Regularly inspect the rivets on the nose of your guide bar for any signs of damage, wear, or loosening. Loose or damaged rivets may feel uneven or protrude from the guide bar.

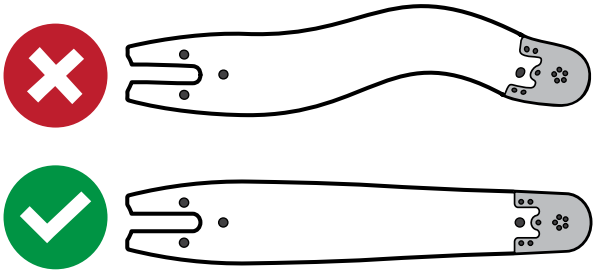
Loose rivets can be rehammered to secure. If the rivet head is missing, replace with a new rivet. If the bar has a replaceable nose it may need to be replaced to prevent further damage or potential safety hazards during operation.



STRAIGHTEN GUIDE BAR

Guide bar must be straight before use, if your guide bar has a slight bend you can straighten with the correct tools.

If your guide bar is bent/twisted beyond repair, discard.



Titanium® LX

HARVESTER SAW CHAIN

TITANIUM® LX HARVESTER SAW CHAIN

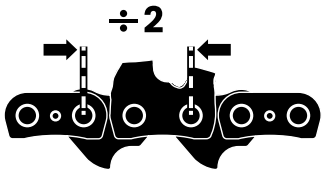
The GB Titanium® LX Harvester Chain is in a class of its own, specifically engineered for harvesters to deliver ultra-long run times without the need for frequent sharpening. Crafted with advanced technology, it maintains its sharpness significantly longer than any other brand on the market. Manufactured at our cutting-edge chain facility in the United Kingdom, every stage of the design and engineering process is focused on optimizing performance and durability in the toughest conditions.

With our new edge technology, you'll spend less time halting operations to sharpen the chain, resulting in more cutting time.

SAW CHAIN PITCH

Saw chain pitch is the distance between any three consecutive rivets, divided by two.

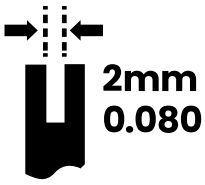
- **GB TITANIUM® LX Harvester Saw Chain is .404" pitch**



SAW CHAIN GAUGE

Saw Chain Gauge is the term used to describe the thickness of the drive link tang, which fits into the groove of the guide bar.

- **GB TITANIUM® LX Harvester Saw Chain is 0.080" (2.0 mm)**



WARNING: To reduce risk of injury, always use personal protective equipment (gloves and safety glasses)

TITANIUM® LX CHAIN MAINTENANCE:

CLEAN

Clean your saw chain, removing dirt, debris and lubricant. This step is required before you inspect the chain.

INSPECT

Inspect the cleaned chain for:

- Broken, cracked, or damaged components
- Excessive saw chain stretch
- Loose rivet joints (if you can rotate the rivets with your fingers, they're too loose.)

DISCARD

Discard your saw chain if your inspection finds:

- Broken, cracked, or damaged components.
- Excessive saw chain stretch.
- Loose rivet joints (if you can rotate the rivets with your fingers, they're too loose.)
- Dull edge on cutters

THE PROFESSIONALS CHOICE