

MSA 220.1 T, 220.1 TC

STIHL



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stellt, dass die Sicherheit des Elektrowerkzeugs erhalten bleibt.

- b) **Warten Sie niemals beschädigte Akkus.**
Sämtliche Wartung von Akkus sollte nur durch den Hersteller oder bevollmächtigte Kundendienststellen erfolgen.

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IMPORTANT! READ AND UNDERSTAND BEFORE USING AND KEEP IN A SAFE PLACE FOR REFERENCE.

1 Guide to Using this Manual

1.1 Applicable documents

The local safety regulations apply.

- ▶ In addition to this User Manual, you should also read, understand and retain the following documents:
 - User Manual for STIHL AR battery
 - User Manual for "AP belt bag with connecting cable"
 - User Manual for "2-in-1 AP webbing sling adapter"
 - Safety instructions and precautions for STIHL AP battery

- User Manual for STIHL AL 101, 301, 301-4, 501 chargers
- Safety information for STIHL batteries and products with built-in battery:
www.stihl.com/safety-data-sheets

For further information on STIHL connected, compatible products and FAQs, please visit www.connect.stihl.com or available from a STIHL authorized dealer.

The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. These word marks and logos are used by STIHL under license.

Batteries with  are equipped with a Bluetooth® radio interface. Local operating restrictions (in aircraft or hospitals, for example) must be complied with.

1.2 Symbols in Text



This symbol refers to a chapter in this instruction manual.

1.3 Symbols used with warnings in the text



WARNING

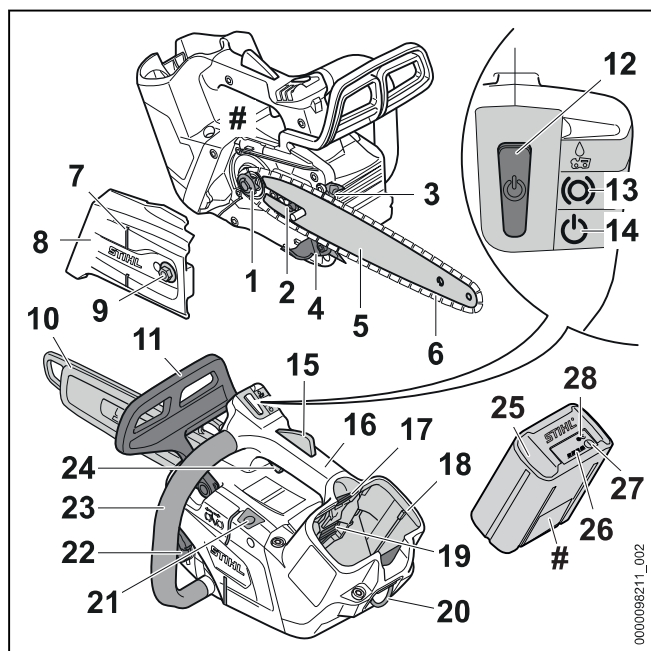
- This symbol indicates dangers that can cause serious injuries or death.
 - ▶ The measures indicated can avoid serious injuries or death.

NOTICE

- This symbol indicates dangers that can cause damage to property.
 - ▶ The measures indicated can avoid damage to property.

2 Overview

2.1 Chainsaw and Battery



- 1 Chain sprocket**
The chain sprocket drives the saw chain.
- 2 Tensioning screw**
The tensioning screw is used to adjust the chain tension.
- 3 Spiked bumper**
The spiked bumper supports the chainsaw against the wood while cutting.
- 4 Chain catcher**
The chain catcher catches the saw chain if it breaks or comes off the bar.
- 5 Guide bar**
The guide bar supports and guides the saw chain.
- 6 Saw chain**
The saw chain cuts the wood.
- 7 Felling notch**
The felling direction can be controlled by the felling notch.
- 8 Chain sprocket cover**
The chain sprocket cover covers the chain sprocket and fastens the guide bar to the chainsaw.
- 9 Nut**
The nut secures the chain sprocket cover to the chainsaw.
- 10 Chain scabbard**
The chain scabbard protects against contact with the saw chain.
- 11 Front hand guard**
The front hand guard protects the operator's left hand against contact with the saw chain and is used to engage the chain brake in the event of kickback.
- 12 Unlock button**
The unlock button is used to switch on the chainsaw.
- 13 "CHAIN BRAKE" LED**
This LED indicates whether the chain brake is engaged.
- 14 "STATUS" LED**
This LED shows the status of the chainsaw.
- 15 Trigger lockout**
The trigger lockout unlocks the trigger.
- 16 Control handle**
The control handle is used to control, hold and guide the chainsaw.
- 17 Locking lever**
The locking lever holds the battery in the battery compartment.
- 18 Battery compartment**
The battery compartment holds the battery.
- 19 Air filter**
The air filter filters the air entering the engine.
- 20 Ring**
The ring is used for hanging the chainsaw while working in a tree.
- 21 Oil pump adjusting screw**
The oil pump adjusting screw is used to adjust the saw chain oil feed rate.
- 22 Oil tank cap**
The oil tank cap closes the oil tank.
- 23 Handlebar**
The handlebar is used to hold, control and carry the chainsaw.
- 24 Trigger**
The trigger turns the chainsaw on and off.
- 25 Battery**
The battery supplies the chainsaw with power.
- 26 LEDs**
The LEDs indicate the state of charge of the battery and any faults.
- 27 Pushbutton**
The pushbutton activates the LEDs on the battery. The pushbutton activates and deactivates Bluetooth® radio interface (if available).

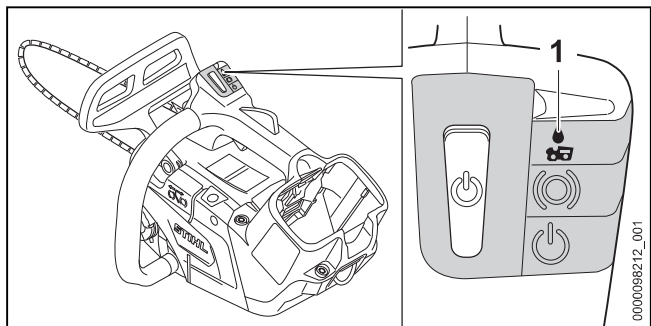
28 "BLUETOOTH®" LED (only for batteries with)

The LED indicates the activation and deactivation of the Bluetooth® interface.

Rating plate with the machine number

2.2 Feature

Depending on the market, the chainsaw may have the following features:



1 "SAW CHAIN OIL" LED

The LED indicates that no saw chain oil is being delivered.

2.3 Symbols

Meanings of symbols that may be on the chainsaw and battery:



This symbol shows the direction of rotation of the saw chain.



Turn in this direction to tension the saw chain.



This symbol marks the oil tank for saw chain oil.



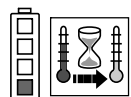
This symbol marks the oil pump adjusting screw and the chain oil feed rate.



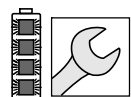
Direction in which the chain brake is engaged or released.



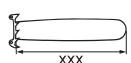
This symbol marks the unlock button.



1 LED lights up red. The battery is too warm or too cold.



4 LEDs flash red. There is an error in the battery.



Length of guide bar that may be used.



Guaranteed sound power level in accordance with Directive 2000/14/EC in dB(A) for the purpose of comparing the sound emissions of products.



Recharge this battery with a STIHL charger. The admissible chargers are listed in these safety instructions.



The battery is equipped with a Bluetooth® radio interface and can be paired with the STIHL connected app.



The information next to the symbol indicates the energy content of the battery according to the cell manufacturer's specification. The energy content available in operation is lower.



Do not dispose of the product with domestic waste.

3 Safety Precautions

3.1 Warning symbols

Meanings of warning symbols on the chainsaw or the battery:



Observe safety warnings and take the necessary precautions.



Read and understand the User Manual and keep it in a safe place for reference.



Wear safety glasses, hearing protection and a hard hat.



Wear long trousers with cut-retardant inserts and cut-retardant sleeves on both arms.



Hold the chainsaw firmly with both hands.



Observe the safety information on kick-back and take the necessary precautions.



Only persons who have been trained in the use of a tree service chainsaw may use this chainsaw.



Remove the battery during work interruptions, transport, storage, maintenance or repair.



Protect the battery against heat and fire.



Do not immerse the battery in liquids.

3.2 Intended Use

STIHL MSA 220.1 T and 220.1 TC tree care chainsaws are designed for tree care and cutting in the crown of a standing tree.

The chainsaw must not be used for work on the ground.

The chainsaw can be used in the rain.

The ring serves to secure the chainsaw on a chainsaw stop featuring overload protection and to transport the saw into the tree at the strap or using a rope.

The chainsaw is powered by a STIHL AP battery or a STIHL AR battery,  20.4.

When you are climbing in a tree, the chainsaw must be used only with a STIHL AP battery inserted directly in the saw or a 2-in-1 AP webbing sling adapter in conjunction with a STIHL AP battery.

Depending on the cutting attachment, the battery and accessories, additional instructions may apply,  21.1.

The battery with  in combination with the STIHL connected app enables customization and the transfer of information to the battery based on Bluetooth® technology.

WARNING

- Using batteries not approved for the chainsaw by STIHL can cause fires and explosions. Persons may be seriously or fatally injured, and property may be damaged.
 - ▶ Operate the chainsaw with a STIHL AP battery or a STIHL AR battery.
- Using the chainsaw or battery other than for its intended use can result in serious or fatal injuries and damage to property.
 - ▶ Always use the chainsaw as described in this User Manual.
 - ▶ Use the battery as described in this User Manual, the STIHL AR battery User Manual, the STIHL connected app and at www.connect.stihl.com.

3.3 The Operator

WARNING

- Persons who have not been trained in tree surgery and maintenance techniques with a tree service chainsaw cannot recognize or assess the dangers of the chainsaw or the

battery. The user or other persons may sustain serious or fatal injuries.



- ▶ Read, understand and save the instruction manual.



- ▶ Only persons who have been trained in the use of a tree service chainsaw may use this chainsaw.
- ▶ If the chainsaw or battery is passed on to another person: Always give them the instruction manual.
- ▶ Make sure the user meets the following requirements:
 - The user must be rested.
 - The user must be in good physical condition and mental health to operate and work with the chainsaw and battery. If the user's physical, sensory or mental ability is restricted, he or she may work only under the supervision of or as instructed by a responsible person.
 - The user is able to recognize and assess the risks involved in using the chainsaw and battery.
 - The user must be of legal age or is being trained in a trade under supervision in accordance with national rules and regulations.
 - The user must not be under the influence of alcohol, medication or drugs.
- ▶ If you have any queries: Contact a STIHL servicing dealer for assistance.

3.4 Clothing and equipment

WARNING

- Long hair may be pulled into the chainsaw while working. This may result in serious injury to the user.
 - ▶ Tie up and secure long hair above your shoulders.
- Objects can be thrown at high speed during operation. This may result in injury to the user.



- ▶ Wear close-fitting safety glasses. Suitable protective glasses tested in accordance with European standard EN 166, EN ISO 16321 or in accordance with national standards and bearing the corresponding label are available from retailers.
- ▶ STIHL recommends wearing face protection.
- ▶ Wear a long-sleeved, close fitting top.
- Noise is generated during operation. Noise can damage your hearing.



- ▶ Wear hearing protection.

- Falling objects can cause head injuries.



- ▶ If objects are likely to fall while working: wear a hard hat.

- Dust can be whipped up during operation: Whipped up dust can damage the respiratory passages and cause allergic reactions.

- ▶ If dust is whipped up or forms a cloud: Wear a dust respirator mask.

- Unsuitable clothing can snag on wood or scrub and may become caught in the chain saw. Users not wearing suitable clothing may be seriously injured.

- ▶ Wear close-fitting clothing.
- ▶ Remove scarves and jewelry.

- The user may come into contact with the moving saw chain while working. This may result in serious injury to the user.



- ▶ Wear long trousers with cut-retardant inserts and cut-retardant sleeves on both arms.

- The user may cut himself or herself on wood while working. The user may come into contact with the saw chain during cleaning or servicing. This may result in injury to the user.

- ▶ Wear work gloves made of robust material.

- Wearing unsuitable footwear may cause the user to slip. If the user comes into contact with the moving saw chain, he or she may suffer cuts. This may result in injury to the user.

- ▶ Wear chainsaw boots with cut protection.

- When working in a tree there is risk of the user falling down. This may result in serious or fatal injury to the user.

- ▶ Put on tear-resistant personal fall protection equipment.

3.5 Work Area and Surroundings

3.5.1 Chainsaw

⚠ WARNING

- Bystanders, children and animals are not aware of the dangers of the chainsaw or thrown objects. Innocent bystanders, children and animals may be seriously injured and damage to property may occur.
 - ▶ Keep bystanders, children and animals away from the work area.
 - ▶ Do not leave the chainsaw unattended.

- ▶ Make sure that children cannot play with the chainsaw.
- Electrical components of the chainsaw can produce sparks. Sparks may cause a fire or an explosion in an easily combustible or explosive environment. This can result in serious or fatal injuries and damage to property.
 - ▶ Do not work in an easily combustible or explosive environment.

3.5.2 Battery

⚠ WARNING

- Bystanders, children and animals cannot recognize or assess the dangers of the battery. Bystanders, children and animals may be seriously injured.
 - ▶ Keep bystanders, children and animals away from the work area.
 - ▶ Do not leave the battery unattended.
 - ▶ Make sure that children cannot play with the battery.
- The battery is not protected against all ambient conditions. If the battery is exposed to certain ambient conditions, the battery may catch fire, explode or be irreparably damaged. This may result in serious injury to people and damage to property.



- ▶ Protect battery from heat and fire.
- ▶ Do not throw the battery into a fire.

- ▶ Do not charge, use and store the battery outside of the specified temperature limits, 20.5.



- ▶ Do not immerse the battery in liquids.

- ▶ Keep battery away from small metal parts.
- ▶ Do not expose the battery to high pressure.
- ▶ Do not expose the battery to microwaves.
- ▶ Protect the battery against chemicals, salts and fertilizers.

3.6 Safe Condition

3.6.1 Chainsaw

The chainsaw is in a safe condition if the following points are observed:

- The chainsaw is not damaged.
- The chainsaw is clean.
- The ring is not damaged.
- The chain catcher is not damaged.
- The chain brake is operating properly.
- The controls function properly and have not been modified.

- The chain lubrication is operating properly.
- Wear marks on the chain sprocket are not deeper than 0.5 mm.
- A combination of guide bar and saw chain recommended in this User Manual is mounted.
- The guide bar and saw chain are properly mounted.
- The saw chain is properly tensioned.
- Only original STIHL accessories designed for this chainsaw model are fitted.
- The accessories are correctly attached.
- The oil tank cap is closed.

WARNING

- If not in safe condition, components may no longer operate correctly and safety devices may be rendered ineffective. There is a risk of serious or fatal injury.
 - ▶ Work only with an undamaged chainsaw.
 - ▶ If the chainsaw is dirty: Clean the chainsaw.
 - ▶ Use chainsaw with an undamaged ring.
 - ▶ Work only with an undamaged chain catcher.
 - ▶ Never modify your chainsaw. Exception: Mounting a combination of guide bar and saw chain recommended in this User Manual.
 - ▶ If the controls do not function properly: Do not use your chainsaw.
 - ▶ Only fit original STIHL accessories designed for this chainsaw model.
 - ▶ Mount the guide bar and saw chain as described in this User Manual.
 - ▶ Attach accessories as described in this User Manual or in the User Manual for the accessories.
 - ▶ Never insert objects in the chainsaw's openings.
 - ▶ Close the oil tank cap.
 - ▶ Replace worn or damaged labels.
 - ▶ If you are unsure: Consult a STIHL authorized dealer.

3.6.2 Guide Bar

The guide bar is in a safe condition if the following points are observed:

- Guide bar is not damaged.
- Guide bar is not deformed.
- The minimum groove depth is maintained,  20.3.
- Bar rails are free from burrs.
- Bar groove is not pinched or splayed.

WARNING

- If the guide bar is not in a safe condition, it can no longer support and guide the saw chain

properly. The rotating saw chain can jump off the guide bar. This can result in serious or fatal injuries.

- ▶ Work only with an undamaged guide bar.
- ▶ If the groove depth is less than the minimum depth: Mount a new guide bar.
- ▶ Deburr the guide bar every week.
- ▶ If you have any queries: Contact your STIHL servicing dealer.

3.6.3 Saw Chain

The saw chain is in a safe condition if the following points are observed:

- Chain is not damaged.
- Chain is properly sharpened.
- The service marks on the cutters are still visible.

WARNING

- If components do not comply with safety requirements, they will no longer function properly and safety devices may be rendered inoperative. This can result in serious or fatal injuries.
 - ▶ Work only with an undamaged saw chain.
 - ▶ Sharpen the chain properly.
 - ▶ If you have any queries: Contact your STIHL servicing dealer for assistance.

3.6.4 Battery

The battery is in a safe condition if the following points are observed:

- Battery is undamaged.
- The battery is clean and dry.
- Battery functions properly and has not been modified.

WARNING

- A battery that is not in a safe condition cannot operate safely. Persons may be seriously injured.
 - ▶ Never work with a damaged battery.
 - ▶ Never attempt to charge a damaged or defective battery.
 - ▶ If the battery is dirty: Clean the battery.
 - ▶ If the battery is wet or damp: Allow the battery to dry,  20.6.
 - ▶ Never attempt to modify the battery.
 - ▶ Never insert objects in the battery's openings.
 - ▶ Never bridge the battery's contacts with metallic objects (short circuit).
 - ▶ Do not open the battery.
 - ▶ Replace worn or damaged labels.

- Fluid may leak from a damaged battery. If that liquid comes into contact with the skin or eyes, the skin or eyes may be irritated.
 - ▶ Avoid contact with the liquid.
 - ▶ If skin contact occurs: Wash affected areas of skin with plenty of water and soap.
 - ▶ In the event of contact with eyes: Rinse eyes with plenty of water for at least 15 minutes and consult a doctor.
- A damaged or defective battery may smell unusual, emit smoke or burn. Persons may be seriously or fatally injured, and property may be damaged.
 - ▶ If the battery smells unusual or emits smoke: do not use the battery and keep it away from combustible substances.
 - ▶ If the battery catches fire: Attempt to extinguish the battery with a fire extinguisher or water.

3.7 Working

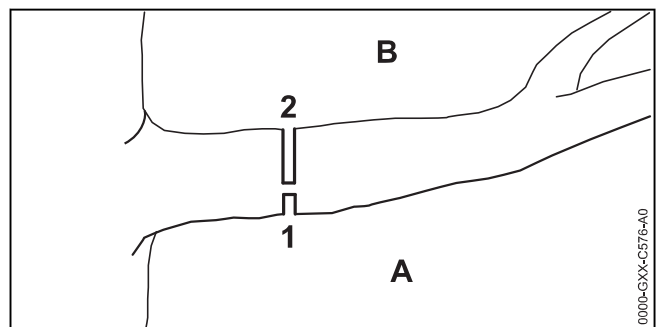
3.7.1 Sawing

! WARNING

- Always work within calling distance of others so that you can summon help in an emergency.
 - ▶ Make sure that people are within earshot outside the working area.
- In certain situations, the user may no longer be able to concentrate on their work. The user may lose control of the chain saw and may trip, fall and be seriously injured.
 - ▶ Work calmly and methodically.
 - ▶ If light and visibility are poor: Do not use your saw.
 - ▶ Use the chain saw on your own.
 - ▶ Do not work above shoulder height.
 - ▶ Watch out for obstacles.
 - ▶ If you climb in a tree: Use a rope protection.
 - ▶ If the saw is operated by a power supply with connecting cable: Use a lift bucket.
 - ▶ If you start feeling fatigue: Take a break.
- When working up in a tree, the chain saw may fall to the ground. This may result in serious injury to people and damage to property.
 - ▶ Secure chainsaw with a chainsaw stop installed using the ring. Chainsaw stop must be equipped with overload protection. Suitable accessories are available from authorized dealers
- The moving saw chain can cut the user. This may result in serious injury to the user.
 - ▶ Do not touch the rotating saw chain.

- ▶ If the saw chain is blocked by an object: Switch off the chainsaw, engage the chain brake and remove the battery. Before clearing the jam.
- The moving saw chain warms up and expands. If the saw chain is not sufficiently lubricated and retensioned, the saw chain may jump off the guide bar or it may break. This may result in serious injury to people and damage to property.
 - ▶ Use saw chain lubricant.
 - ▶ Check the saw chain tension regularly while working. If saw chain tension is insufficient: Tension the saw chain.
- If the chain saw starts behaving differently or in an unusual way while operating, the chain saw may be in an unsafe condition. This may result in serious injury to people and damage to property.
 - ▶ Stop working, remove the battery and contact a STIHL authorized dealer.
- The chain saw may cause vibrations in operation.
 - ▶ Wear gloves.
 - ▶ Take breaks.
 - ▶ If signs of a circulatory disorder (white fingers disease) occur: Consult a doctor.
- If the moving saw chain hits a hard object, sparks may occur. Sparks can cause fires in a flammable environment. Persons may be seriously or fatally injured, and property may be damaged.
 - ▶ Do not use the chain saw in a flammable environment.
- The saw chain runs on for a short period after you release the trigger. People may be cut by the moving saw chain. People may suffer serious injuries as a result.
 - ▶ Wait for the saw chain to stop moving.

! WARNING



- If you saw wood which is under tension, the guide bar may become jammed. The user may lose control of the chain saw and be seriously injured.

- ▶ Saw a relief cut (1) in the compression side (A) first, then saw a bucking (2) cut in the tension side (B) from above, directly above the first cut.

⚠ DANGER

- Working near live electric cables may result in accidental contact with the saw chain and damage the cables. This may result in serious or fatal injury to the user.
 - ▶ Do not operate in the vicinity of live cables.

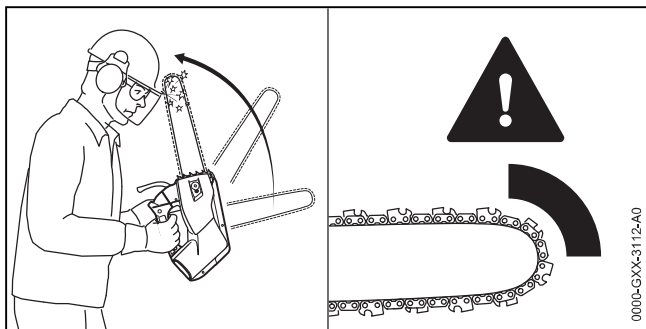
3.7.2 Felling

⚠ WARNING

- Inexperienced users cannot assess the dangers of felling a tree. This can result in serious or fatal injuries and damage to property.
 - ▶ If you have any queries: Do not fell the tree yourself.
- Parts of the tree being removed and branches can fall on bystanders or objects during the felling operation. This can result in serious or fatal injuries and damage to property.
 - ▶ Determine direction of fall so that the area in which the part of the tree being removed falls is clear.
 - ▶ Do not allow bystanders, children or animals within 2.5 tree lengths of the work area.

3.8 Reactive Forces

3.8.1 Kickback

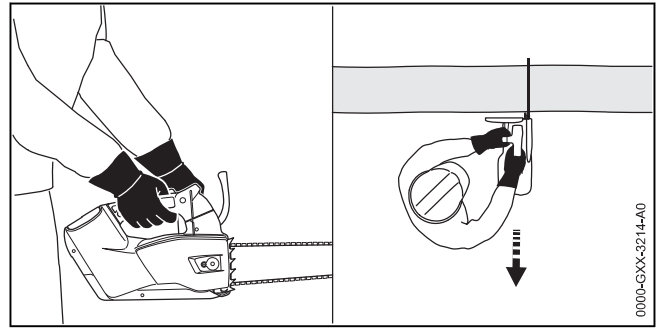


Kickback can be caused for the following reasons:

- The rotating saw chain in the upper quadrant of the bar nose makes contact with a hard object and is suddenly braked.
- The rotating saw chain is pinched at the bar nose.

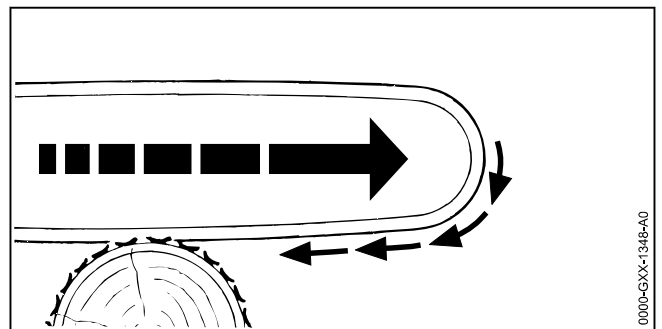
The chain brake cannot prevent kickback.

⚠ WARNING



- If kickback occurs, the saw can be thrown up in the direction of the operator. Due to the special handle design (closely spaced handles) there is a risk of the operator losing control of the chainsaw and sustaining serious or fatal injuries.
 - ▶ Hold the saw firmly with both hands.
- ▶ Always keep your body out of the plane of the cutting attachment.
- ▶ Use the working techniques described in this instruction manual.
- ▶ Do not cut with the upper quadrant of the bar nose.
- ▶ Always cut with a properly sharpened and tensioned saw chain.
- ▶ Use a reduced kickback saw chain.
- ▶ Use a guide bar with a narrow radius nose.
- ▶ Always cut with the chain running at full speed.

3.8.2 Pull-in



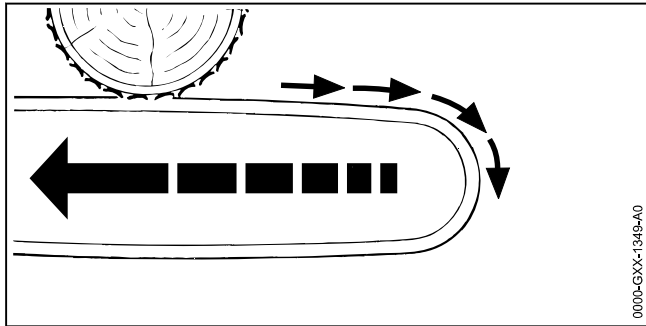
The saw is pulled away from the operator when the bottom of the bar is used for cutting.

⚠ WARNING

- If the rotating chain makes contact with a hard object and is suddenly pinched, the saw is abruptly jerked away from the operator. The operator can lose control of the saw and be seriously or fatally injured.
 - ▶ Hold the saw firmly with both hands.
 - ▶ Operate the saw as described in this instruction manual.

- ▶ Keep the guide bar straight in the cut.
- ▶ Apply the spiked bumper properly.
- ▶ Always cut with the chain running at full speed.

3.8.3 Pushback



The saw is pushed back toward the operator when the top of the bar is used for cutting.

! WARNING

- If the rotating chain makes contact with a hard object and is suddenly pinched, the saw can be abruptly pushed back toward the operator. The operator can lose control of the saw and be seriously or fatally injured.
 - ▶ Hold the saw firmly with both hands.
 - ▶ Operate the saw as described in this instruction manual.
 - ▶ Keep the guide bar straight in the cut.
 - ▶ Always cut with the chain running at full speed.

3.9 Transporting

3.9.1 Chainsaw

! WARNING

- The saw may tip over or shift during transport. Persons may be injured or property may be damaged.



- ▶ Remove the battery.

- ▶ Engage the chain brake.
 - ▶ Push the chain scabbard over the guide bar until it engages, so that it completely covers the guide bar.
 - ▶ Secure the chainsaw with lashing straps, belts or a net to prevent it tipping over and moving around.
- If the chainsaw is transported using the ring of the chain scabbard, the chainsaw may fall over. Persons may be injured or property may be damaged.

- ▶ Transport the chainsaw by the ring on the housing.

3.9.2 Battery

! WARNING

- The battery is not protected against all ambient conditions. The battery may be damaged if it is exposed to certain ambient conditions, and damage to property may occur.
 - ▶ Never transport a damaged battery.
- The battery may turn over or shift during transport. This may result in injury to people and damage to property.
 - ▶ Pack the battery in packaging in such a way that it cannot move.
 - ▶ Secure the packaging so that it cannot move.

3.10 Storing

3.10.1 Chainsaw

! WARNING

- Children are not aware of and cannot assess the dangers of a chainsaw. Children may be seriously injured.



- ▶ Remove the battery.

- ▶ Engage the chain brake.
 - ▶ Push the chain scabbard over the guide bar until it engages, so that it completely covers the guide bar.
 - ▶ Store the chainsaw out of the reach of children.
- Moisture can cause corrosion of the electrical contacts on the chainsaw and its metal components. This can damage the chainsaw.



- ▶ Remove the battery.

- ▶ Store the chainsaw in a clean and dry condition.

3.10.2 Battery

! WARNING

- Children are not aware of and cannot assess the dangers of the battery. Children may be seriously injured.
 - ▶ Store the battery out of the reach of children.

- The battery is not protected against all ambient conditions. If the battery is exposed to certain ambient conditions, the battery may be irreparably damaged.
 - ▶ Store the battery in a clean and dry condition.
 - ▶ Store the battery in an enclosed space.
 - ▶ Store the battery separately from the chainsaw.
 - ▶ If the battery is stored in the charger, disconnect the mains plug and store the battery at a state of charge between 40% and 60% (2 lit green LEDs).
 - ▶ Do not store the battery outside of the specified temperature limits,  20.5.

3.11 Cleaning, Maintenance and Repair

WARNING

- The saw may start unintentionally if the battery is left in place during cleaning, maintenance or repair operations. This may result in serious injury to people and damage to property.



- ▶ Remove the battery.

- ▶ Engage the chain brake.
- Aggressive cleaning agents, a water jet or pointed objects can damage the chainsaw, guide bar, the saw chain and the battery. If the saw, guide bar, saw chain or battery are not cleaned correctly, components may no longer function properly or safety devices may be rendered inoperative. They may cause serious injury to persons.
 - ▶ Clean the saw, guide bar, saw chain and battery as described in this instruction manual.
- If the saw, guide bar, saw chain or battery are not properly serviced or repaired, components may no longer function properly or safety devices may be rendered inoperative. This may result in serious or fatal injury to people.
 - ▶ Do not attempt to service or repair the chainsaw or battery.
 - ▶ If the chainsaw or the battery require servicing or repairs: Contact your STIHL servicing dealer for assistance.
 - ▶ Service or repair the guide bar and saw chain as described in this User Manual.
- The user may be cut by the sharp cutters while cleaning or servicing the saw chain. This may result in injury to the user.

- ▶ Wear work gloves made from resistant material.

4 Preparing the Saw for Operation

4.1 Preparing the chainsaw for operation

The following steps must be performed before commencing work:

- ▶ Ensure that the following components are in a safe condition:
 - Chainsaw,  3.6.1.
 - Guide bar,  3.6.2.
 - Saw chain,  3.6.3.
 - Battery,  3.6.4.
- ▶ Check the battery,  11.7.
- ▶ Fully charge battery as described in the User Manual for the STIHL AL 101, 301, 301-4, 501 chargers.
- ▶ Clean the saw,  16.1.
- ▶ Mount the guide bar and saw chain,  7.1.1.
- ▶ Tension the saw chain,  7.2.
- ▶ Fill up with saw chain oil,  7.3.
- ▶ Check the chain brake,  11.4.
- ▶ Check the controls,  11.5.
- ▶ Check the chain lubrication,,  11.6.
- ▶ If you cannot carry out these steps: Do not use the chainsaw and instead contact a STIHL authorized dealer for assistance.

4.2 Connecting a battery with Bluetooth® radio interface with the STIHL connected app

- ▶ Activate the Bluetooth® radio interface on the mobile device.
- ▶ Activating the Bluetooth® radio interface on the battery,  6.1.
- ▶ Download the STIHL connected app to the mobile device from the App Store and create an account.
- ▶ Open and sign in to the STIHL connected app.
- ▶ Add the battery in the STIHL connected app and follow the instructions on the screen.

For contacts and other information, please visit <https://support.stihl.com> or see the STIHL connected app.

The STIHL connected app is available internationally.

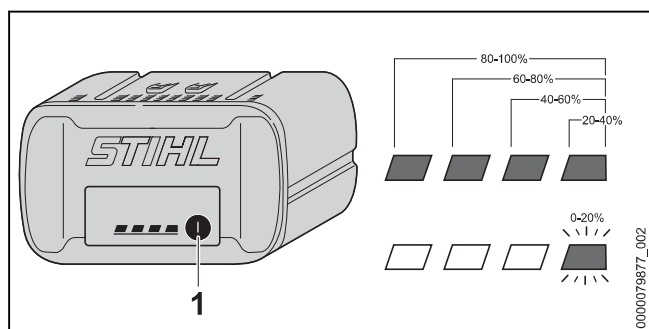
5 Charging the Battery, LEDs

5.1 Charging the battery

The charging time depends on various factors, e.g. the battery temperature or the ambient temperature. For optimal performance, note the recommended temperature ranges, 20.6. The actual charging time may vary from the charging time indicated. The charging time is indicated at www.stihl.com/charging-times.

- Recharge the battery as described in the User Manual for STIHL AL 101, 301, 301-4, 501 chargers.

5.2 Displaying the charge level



- Press the button (1).
The LEDs light up green for about 5 seconds and indicate the state of charge.
- If the LED on the right flashes green: Charge the battery.

5.3 LEDs on Battery

The LEDs can show the state of charge or malfunctions. The LEDs can glow or flash green or red.

The state of charge is indicated when the LEDs glow or flash green.

- If the LEDs glow or flash red: Troubleshooting, 19.1.
Malfunction in chainsaw or battery.

6 Activating and Deactivating Bluetooth® Radio Interface

6.1 Activating the Bluetooth® Radio Interface

- If the battery has a Bluetooth® radio interface: Press and hold the pushbutton until the "BLUETOOTH®" LED next to the symbol lights up blue for approximately 3 seconds. The Bluetooth® radio interface on the battery is activated.

6.2 Deactivating the Bluetooth® Radio Interface

- If the battery has a Bluetooth® radio interface: Press and hold the pushbutton until the "BLUETOOTH®" LED next to the symbol lights up blue six times. The Bluetooth® radio interface on the battery is deactivated.

6.3 Reset battery to the factory setting via a Bluetooth® radio interface (AP 200.0 S, 300 S, 300.0 S, 500.0 S only)

Resetting the battery to the factory setting means that all user-specific data will be deleted.

- Press the pushbutton four (4) times in quick succession and keep it pressed on the fourth time until the "BLUETOOTH®" LED next to the symbol flashes blue.
- Then release the pushbutton immediately.
- Connect the battery to the STIHL connected app and check whether all user-specific data has been deleted.

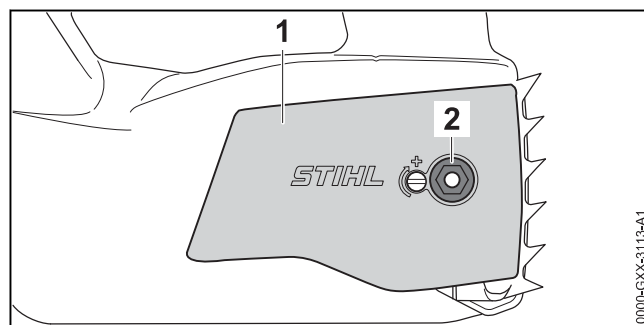
7 Assembling the Saw

7.1 Mounting and Removing the Bar and Chain

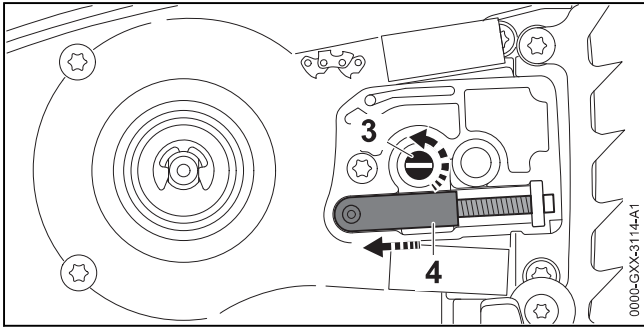
7.1.1 Mounting the Guide Bar and Saw Chain

The guide bar and saw chain combinations that can be used with the chain sprocket are listed in the specifications, 21.

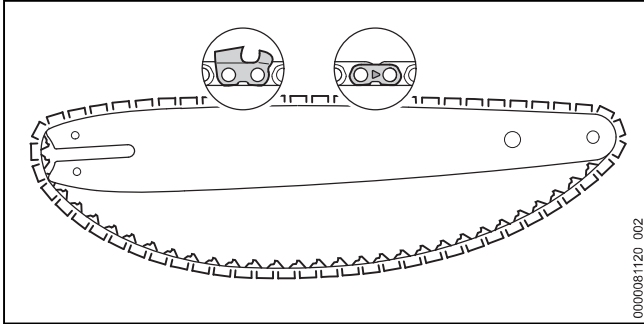
- switch off chain saw, engage chain brake and remove battery



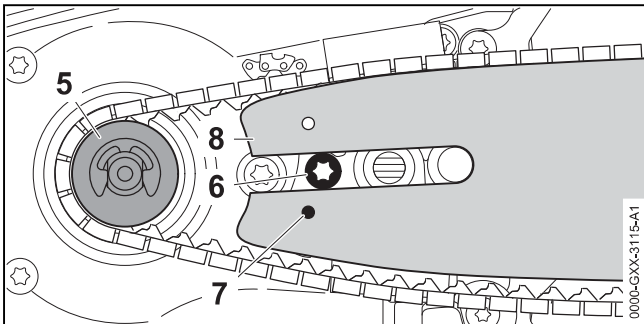
- Unscrew the nut (2).
- Remove the chain sprocket cover (1).



- ▶ Turn the tensioning screw (3) counterclockwise until the tensioner slide (4) butts against the left end of the housing.



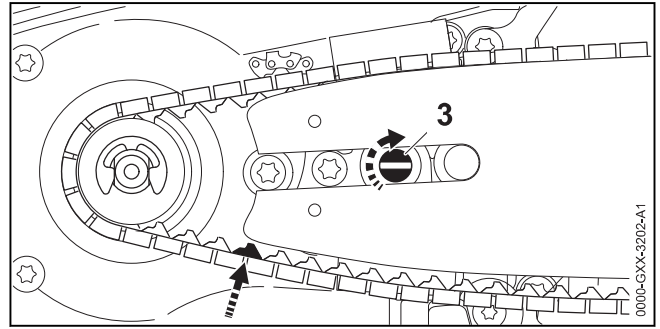
- ▶ Fit the saw chain in the guide bar groove so that the arrows on the tie straps on the top of the bar point in the direction of rotation.



- ▶ Fit the guide bar and chain on the saw and check the following points:
 - The drive links of the saw chain are seated in teeth of the chain sprocket (5).
 - The head of screw (6) is seated in the slot in the guide bar (8).
 - The peg of tensioner slide (4) engages the hole (7) in guide bar (8).

The guide bar (8) may be fitted either way round. The logo on the guide bar (8) may also be upside down.

- ▶ Disengage the chain brake.



- ▶ Turn the tensioning screw (3) clockwise until the saw chain fits snugly against the guide bar. Make sure the drive links of the saw chain engage the guide bar groove. The guide bar (8) and saw chain are positioned against the chainsaw.
- ▶ Fit the chain sprocket cover (1) so that it is flush with the chainsaw.
- ▶ Fit and tighten down the nut (2).

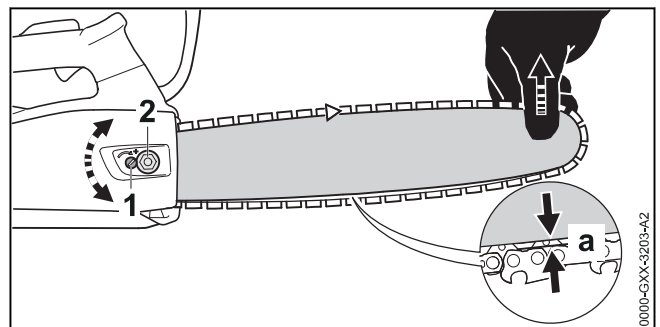
7.1.2 Removing the Bar and Chain

- ▶ Switch off the chainsaw, engage the chain brake and remove the battery.
- ▶ Unscrew the nut.
- ▶ Remove the sprocket cover.
- ▶ Turn the tensioning screw counterclockwise as far as stop. The chain is now slack.
- ▶ Remove the bar and chain.

7.2 Tensioning the Saw Chain

The saw chain expands or contracts during cutting work. The saw chain tension changes as a result. Check the saw chain tension regularly during operation and readjust if necessary.

- ▶ Switch off chainsaw, engage the chain brake and remove the battery.



- ▶ Loosen the nut (2).
- ▶ Disengage the chain brake.
- ▶ Hold the guide bar nose up and turn the tensioning screw (1) clockwise or counterclockwise until the following points apply:
 - The chain sag 'a' in the center of the guide bar is 1 - 2 mm.
 - The saw chain can still be pulled easily along the guide bar with two fingers.

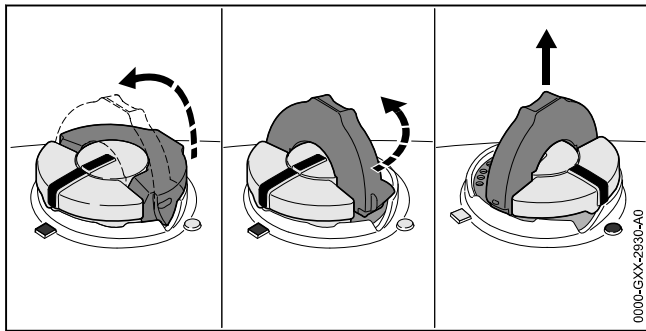
- ▶ Hold the guide bar nose up and tighten down the nut (2) firmly.
- ▶ If the distance 'a' of the chain from the center of the guide bar is not 1-2 mm: Readjust the saw chain tension.

7.3 Filling Up with Saw Chain Oil

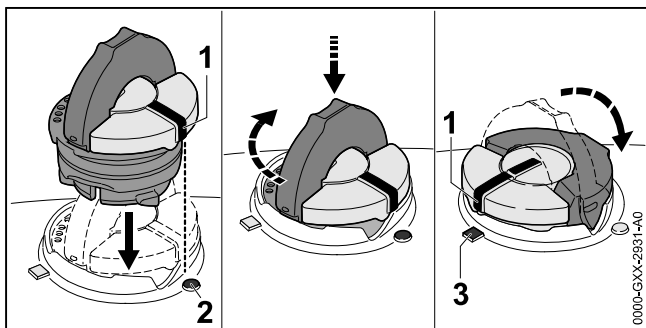
The saw chain oil lubricates and cools the rotating chain.

STIHL recommends you use a STIHL saw chain oil or an equivalent clear or biodegradable chain oil approved for chainsaws.

- ▶ Switch off the chainsaw, engage the chain brake and remove the battery.
- ▶ Place your chainsaw on a level surface so that the oil tank cap faces up.
- ▶ Use a damp cloth to clean the oil tank cap and the area around it.



- ▶ Swing the grip on the oil tank cap to the vertical position.
- ▶ Turn the oil tank cap counterclockwise as far as it will go.
- ▶ Remove the oil tank cap.
- ▶ Fill up with saw chain oil, taking care not to spill any oil and not to overfill the tank.
- ▶ If the grip on the oil tank cap has dropped into the closed position: Raise the grip until it is vertical.

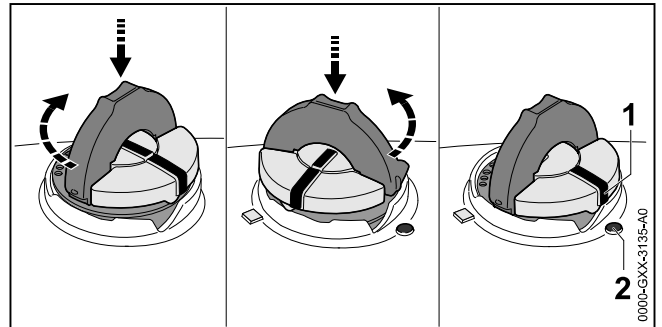


- ▶ Place the oil tank cap in the filler opening so that mark (1) lines up with mark (2).
- ▶ Press the oil tank cap down and rotate it clockwise as far as it will go.
The oil tank cap snaps into place. The mark (1) points to mark (3).

- ▶ Check to see if the oil tank cap can be pulled upwards and off.
- ▶ If the oil tank cap cannot be pulled upwards and off: Fold down the grip on the oil tank cap. The oil tank is closed.

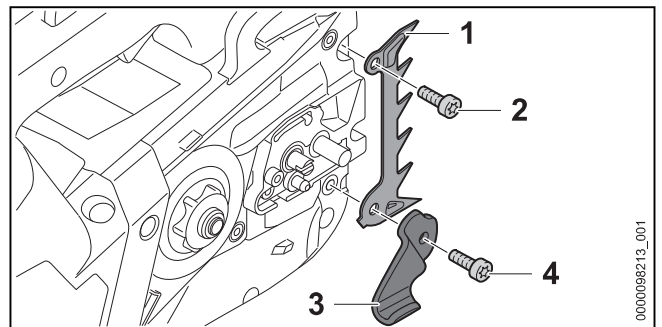
If the oil tank cap can be pulled upwards and off, perform the following steps:

- ▶ Place the oil tank cap in the filler opening – in any position.



- ▶ Press the oil tank cap down and rotate it clockwise as far as it will go.
- ▶ Press the oil tank cap down and rotate it counterclockwise until mark (1) points to mark (2).
- ▶ Now try again to close the oil tank.
- ▶ If the oil tank still cannot be closed properly: Do not use the chainsaw and contact a STIHL dealer for assistance.
The chainsaw is not in a safe condition.

7.4 Mounting the Spiked Bumper



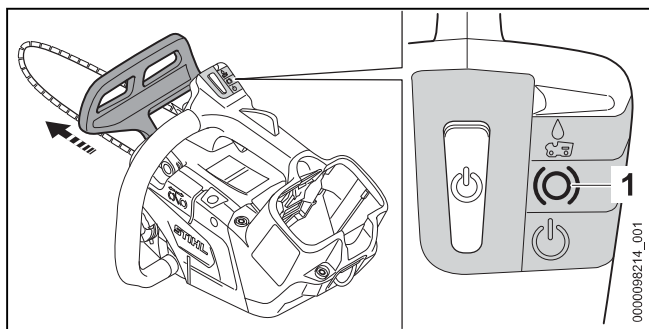
- ▶ Take out the screw (4) and remove the chain catcher (3).
- ▶ Position the spiked bumper (1).
- ▶ Fit the screw (2).
- ▶ Place the chain catcher (3) in position.
- ▶ Insert the screw (4) and secure it firmly.
- ▶ Fully tighten the screw (2).

8 Engaging and Disengaging the Chain Brake

8.1 Engaging the chain brake

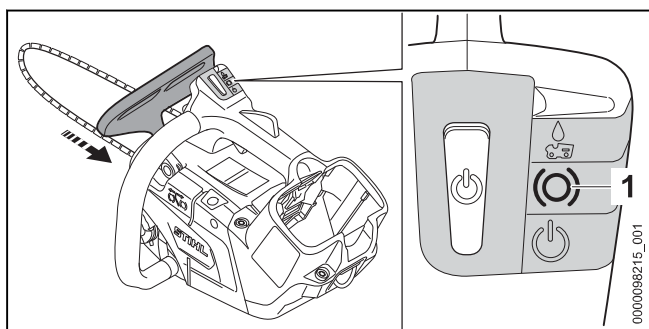
The chainsaw is equipped with a chain brake.

The chain brake is activated by the inertia of the front hand guard if the kickback force is high enough, or it can be engaged by the operator.



- ▶ Push the hand guard away from the front handle with your left hand. The hand guard engages with an audible click. If a battery is inserted: The "CHAIN BRAKE" LED (1) lights up. The chain brake is engaged.

8.2 Disengaging the chain brake

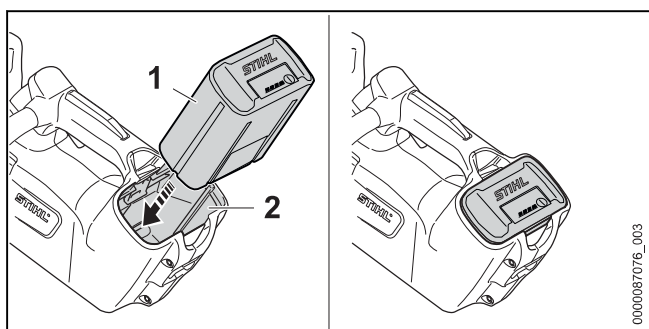


- ▶ Pull the hand guard back towards the handle with your left hand. The hand guard engages with an audible click. If a battery is inserted: The "CHAIN BRAKE" LED (1) goes out. The chain brake is disengaged.

9 Removing and Fitting the Battery

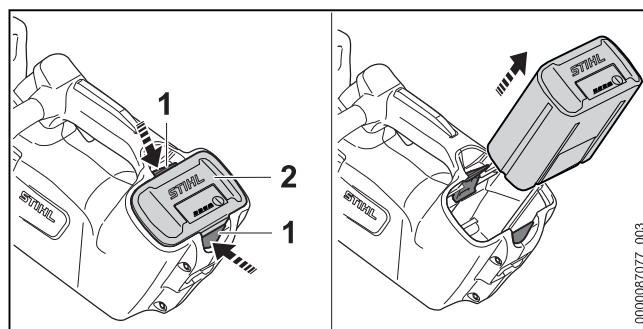
9.1 Inserting the Battery

- ▶ Engage the chain brake.



- ▶ Push the battery (1) into the battery compartment (2) as far as stop. The battery (1) engages with a click and is now locked.

9.2 Removing the battery

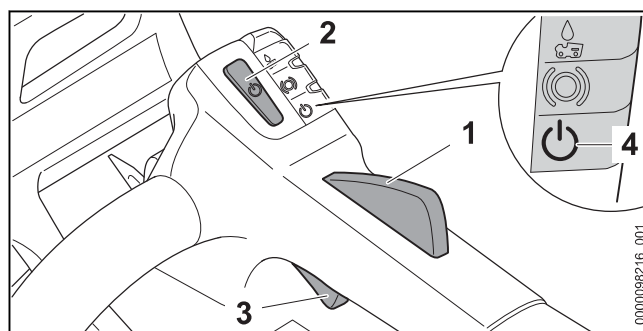


- ▶ Press both locking levers (1). The battery (2) is now unlocked and can be removed.

10 Switching the Saw On/Off

10.1 Switching on the chainsaw

- ▶ Hold the chain saw by the control handle with your right hand, wrapping your thumb around the control handle.
- ▶ Disengage the chain brake.
- ▶ Hold the chainsaw by the handlebar with your left hand, wrapping your thumb around the handlebar.



- ▶ Press the trigger lockout (1) with your hand and keep it pressed.
- ▶ Press the unlock button (2).
- ▶ Press the trigger (3) with your index finger and keep it pressed. The chainsaw accelerates and the chain starts moving.

The more you depress the trigger (3), the faster the saw chain rotates.

The chainsaw can also be switched on by first pressing the unlock button (2) and within 5 seconds (while the "STATUS" LED is flashing) pressing the trigger lockout (1). The trigger (3) is now unlocked, and the chainsaw is ready for use.

If the trigger (3) and the trigger lockout (1) are released after being switched on, the "STATUS" LED (4) flashes for another 5 seconds. While the "STATUS" LED (4) is flashing, the chainsaw can

be switched on again without pressing the unlock button (2).

The power of the tool may vary depending on the battery used.

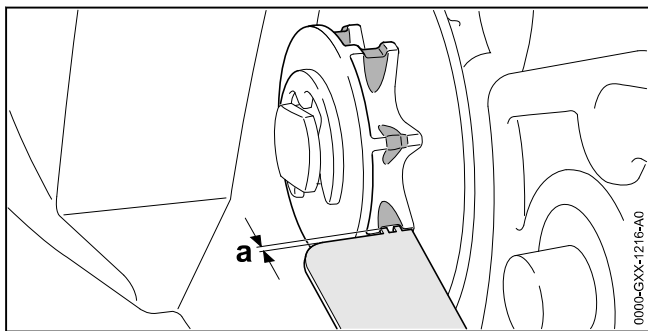
10.2 Switching Off the Chainsaw

- ▶ Release the trigger and trigger lockout. Wait until the saw chain comes to a complete standstill after about 1 second.
- ▶ If the saw chain is still moving after approx. 1 second: Engage the chain brake, remove the battery and consult a STIHL servicing dealer. Your chainsaw is defective.

11 Testing the Chain Saw and Battery

11.1 Checking the Chain Sprocket

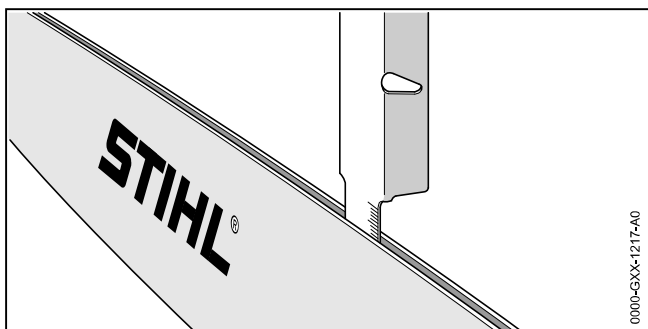
- ▶ Switch off the chain saw, engage the chain brake and remove the battery.
- ▶ Disengage the chain brake.
- ▶ Remove the chain sprocket cover.
- ▶ Remove the bar and chain.



- ▶ Use a STIHL gauge to check the wear marks on the sprocket.
- ▶ If wear marks are deeper than $a = 0.5 \text{ mm}$: Do not use your chain saw and contact your STIHL servicing dealer. The chain sprocket must be replaced.

11.2 Checking the Guide Bar

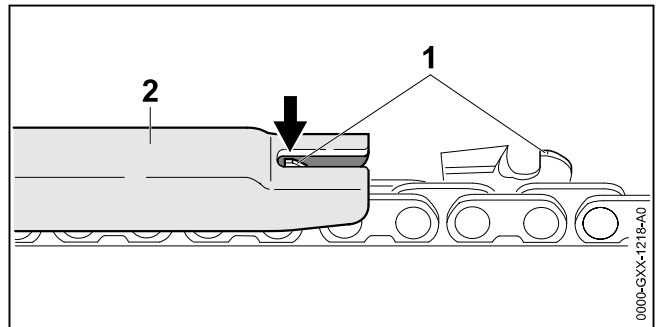
- ▶ Switch off the chain saw, engage the chain brake and remove the battery.
- ▶ Remove the chain and guide bar.



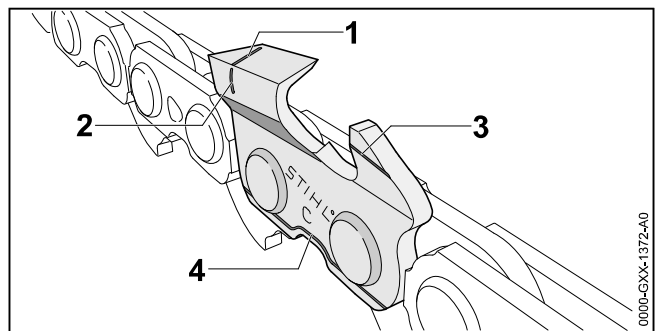
- ▶ Measure depth of bar groove with scale on STIHL filing gauge.
- ▶ Install a new guide bar if one of the following points applies:
 - Guide bar is damaged.
 - Measured bar depth is less than specified minimum depth, [17.3](#).
 - Bar groove is pinched or splayed.
- ▶ If you have any queries: Contact your STIHL servicing dealer.

11.3 Checking the Saw Chain

- ▶ Switch off the chainsaw, engage the chain brake and remove the battery.



- ▶ Use a STIHL filing gauge (2) to check the height of the depth gauges (1). The STIHL filing gauge must match the chain pitch.
- ▶ If a depth gauge (1) projects from the filing gauge (2): Lower the depth gauge (1), [17.3](#).



- ▶ Make sure the service marks (1 to 4) on the cutters are visible.
- ▶ If one of the service marks is not visible on a cutter: Do not use your chainsaw and contact your STIHL servicing dealer.
- ▶ Use a STIHL filing gauge to check that a filing angle of 30° has been maintained on all cutters. The STIHL filing gauge must match the chain pitch.
- ▶ If a filing angle of 30° has not been maintained: Resharpener the saw chain.
- ▶ If you have any queries: Contact your STIHL servicing dealer for assistance.

11.4 Testing the Chain Brake

- ▶ Switch on the saw.

- ▶ Engage the chain brake.
The chain brake is operating properly If the chain stops immediately.
- ▶ If the chain does not stop immediately: Do not use your chainsaw and contact your STIHL servicing dealer for assistance.
The chain brake is defective.

11.5 Checking the controls

Trigger lockout and trigger

- ▶ Engage chain brake and remove battery.
- ▶ Try pressing the trigger without pressing the trigger lockout.
- ▶ If the trigger can be pulled: Do not use your chainsaw and contact your STIHL servicing dealer.
The trigger lockout is faulty.
- ▶ Press and hold the trigger lockout.
- ▶ Press and release the trigger.
- ▶ If the trigger switch or the trigger switch lockout is stiff or does not spring back to its initial position: Do not use the chainsaw. Consult a STIHL servicing dealer.
The trigger or the trigger lockout is defective.

Switching on the chainsaw

- ▶ Insert battery.
- ▶ Disengage the chain brake.
- ▶ Press and hold the trigger lockout.
- ▶ Press the unlock button.
- ▶ Press and hold the trigger.
The saw chain runs.
- ▶ If 3 LEDs on the battery flash red: Remove the battery and contact your STIHL dealer for assistance.
Chainsaw fault.
- ▶ Release the trigger.
The saw chain stops running.
- ▶ If the chain continues to rotate: Engage the chain brake, remove the battery and contact your STIHL servicing dealer.
Your chainsaw is defective.

11.6 Checking Chain Lubrication

- ▶ Fit the battery.
- ▶ Disengage the chain brake.
- ▶ Hold the guide bar over a light surface.
- ▶ Switch on the saw.
Chain oil is thrown off the chain and is visible on the light surface. Chain lubrication is operating properly.
- ▶ If no chain oil can be seen:
 - ▶ Fill up with chain oil.
 - ▶ Check chain lubrication again.
 - ▶ If chain oil is still not visible on the light surface: Do not use your chain saw and con-

tact your STIHL servicing dealer. Chain lubrication is defective.

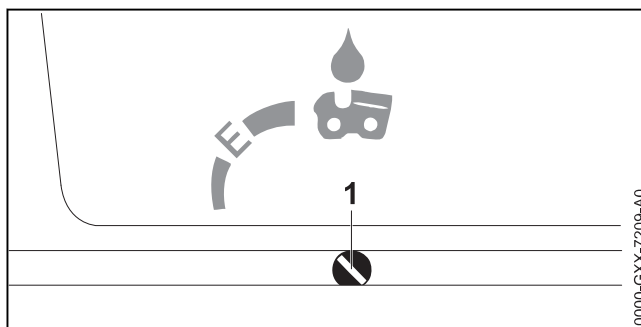
11.7 Testing the Battery

- ▶ Press button on battery.
The LEDs glow or flash.
- ▶ If the LEDs do not glow or flash: Do not use the battery and contact your STIHL servicing dealer.
There is a malfunction in the battery.

12 Operating the Saw

12.1 Adjusting the Oil Feed Rate

The chainsaw has an adjustable oil pump.



The oil feed rate is suitable for most applications when the oil pump adjusting screw (1) is in position E (Ematic).

The oil pump feed rate can be adjusted to suit different bar lengths, wood species and working techniques.

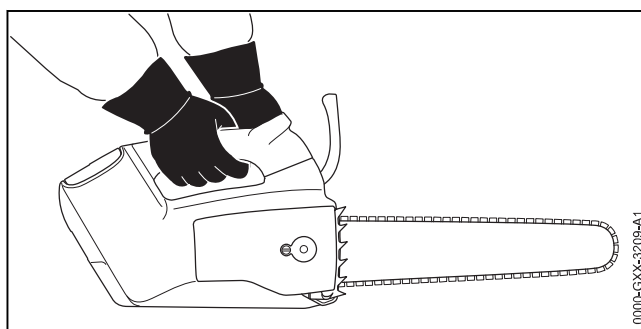
To increase the oil feed rate

- ▶ Switch off chainsaw, engage the chain brake and remove the battery.
- ▶ Turn the oil pump adjusting screw (1) clockwise.

To reduce oil feed rate

- ▶ Switch off chainsaw, engage the chain brake and remove the battery.
- ▶ Turn the oil pump adjusting screw (1) counter-clockwise.

12.2 Holding and controlling the chainsaw



- ▶ Hold and control your chainsaw with your left hand on the handlebar and your right hand on the control handle. Wrap thumb of left hand around the handlebar and thumb of right hand around the control handle.

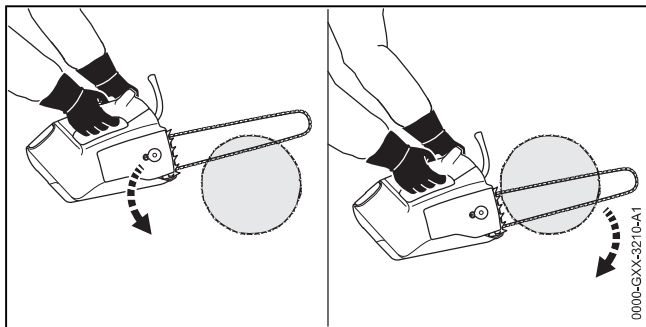
**WARNING**

- The risk of kickback is increased if you use the chainsaw with one hand. If kickback occurs, the saw may be thrown up in the direction of the operator. The operator can lose control of the chainsaw and be seriously or fatally injured.
 - ▶ Do not cut with the upper quadrant of the bar nose.
 - ▶ Never support yourself on the limb being cut.
 - ▶ Never attempt to hold falling limbs.

12.3 Sawing

**WARNING**

- If kickback occurs, the chainsaw can be thrown up in the direction of the operator. This may result in serious or fatal injury to the user.
 - ▶ Always cut with the chain running at full speed.
 - ▶ Do not cut with the upper quadrant of the guide bar nose.
- ▶ Begin the cut with the chain running at full speed and keep the guide bar vertical.

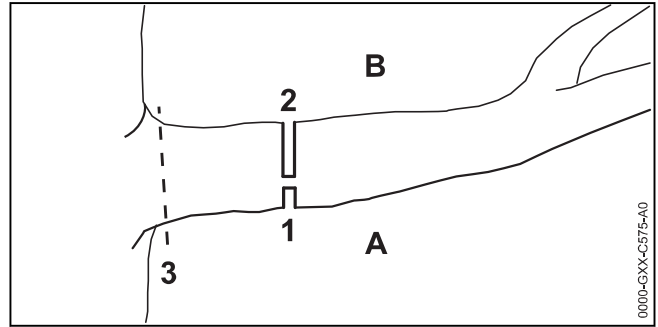


- ▶ Engage the spiked bumper and use it as a fulcrum.
- ▶ Guide the full width of the guide bar into the wood and reposition the spiked bumper as required.
- ▶ Pick up the weight of the chainsaw at the end of the cut.

For optimum performance, observe the recommended temperature ranges, 20.6.

12.4 Limbing

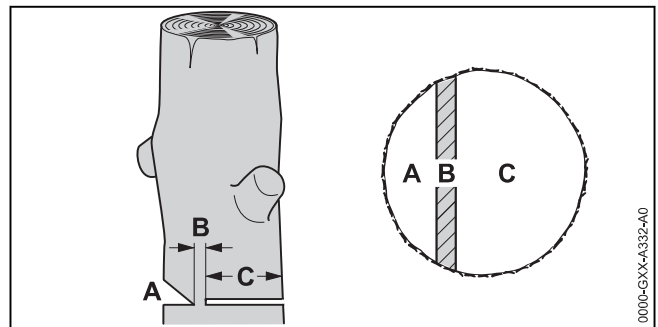
- ▶ With the chain running at full speed, pivot the guide bar downward against the limb.



- ▶ Make a relieving cut (1) in the compression side (A) first, then perform a bucking (2) cut at the tension side (B) from above, directly above the first cut.
- ▶ Make the last cut (3) close to the trunk without damaging the bark.

12.5 Felling

12.5.1 Basic information on felling cut



A Felling notch

The felling notch determines the direction of fall.

B Hinge

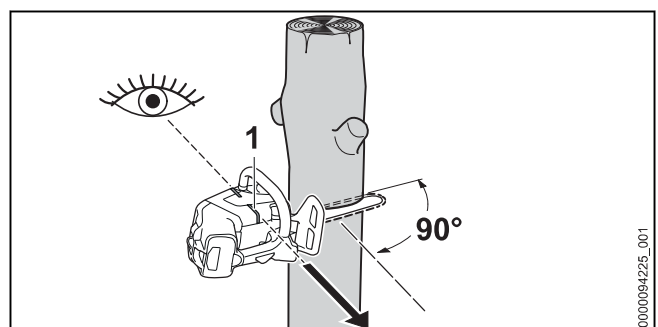
The hinge controls the part of the tree being removed as it drops to the ground. The width of the hinge is 1/10 of the trunk diameter.

C Felling cut

The tree is felled with the felling cut.

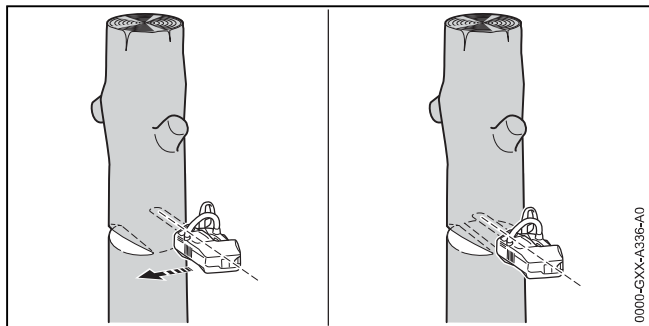
12.5.2 Cutting a felling notch

The felling notch determines the direction that the part of the tree being removed will fall. Country-specific standards for making the felling notch must be observed.



- ▶ Position the saw so that the felling notch is at right angles to the direction of fall.
- ▶ Control the felling direction with the felling notch (1).
- ▶ Make the horizontal cut.
- ▶ Make the angled cut at 45° to the horizontal cut.

12.5.3 Making the felling cut



- ▶ Make horizontal felling cut, taking care not to cut through the hinge.
- ▶ Shout a warning.
- ▶ Push the part of the tree being removed downward over the hinge.
The part of the tree to be removed falls.

13 After Finishing Work

13.1 After Finishing Work

- ▶ Switch off chainsaw, engage the chain brake and remove the battery.
- ▶ If the chainsaw is wet: Allow the chainsaw to dry.
- ▶ If the battery is moist or wet: Allow the battery to dry, 20.6.
- ▶ Clean the chainsaw.
- ▶ Clean the guide bar and saw chain.
- ▶ Loosen the nut on the chain sprocket cover.
- ▶ Back off the tensioning screw 2 turns counter-clockwise.
The saw chain is now slack.
- ▶ Tighten the nut.
- ▶ Push the chain scabbard over the guide bar until it engages, so that it completely covers the guide bar.
- ▶ Clean the battery.

14 Transporting

14.1 Transporting the chainsaw

- ▶ Switch off chainsaw, engage the chain brake and remove the battery.
- ▶ Push the chain scabbard over the guide bar until it engages, so that it completely covers the guide bar.

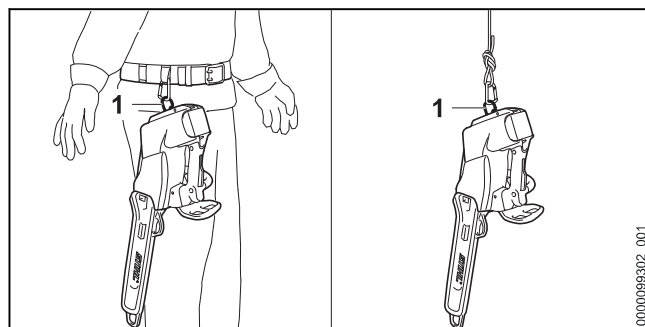
Carrying the Chainsaw

- ▶ Carry the chainsaw by holding the front handle in your right hand with the guide bar pointing to the rear.

Transporting the Chainsaw in a Vehicle

- ▶ Secure the saw to prevent turnover and movement.

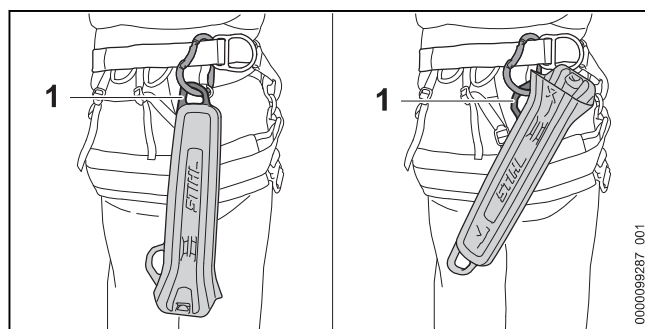
Transporting the Chainsaw by the Eyelet



- ▶ Transport the chainsaw using the ring (1) on your belt or on a rope.

The chainsaw can also be secured to the belt with a comfort hook. The comfort hook is available as an accessory.

Transporting the chain scabbard via the ring



- ▶ Transport the chain scabbard by the ring (1) on the belt.

14.2 Transporting the Battery

- ▶ Switch off the chainsaw, engage the chain brake and remove the battery.
- ▶ Check that the battery is in a safe condition.
- ▶ Pack the battery in packaging in such a way that it cannot move inside the packaging.
- ▶ Secure the packaging so that it cannot move.

The battery is subject to the Carriage of Dangerous Goods regulations. The battery is classified as UN 3480 (lithium ion batteries) and has been tested pursuant to UN Manual Tests and Criteria Part III, Subsection 38.3.

The transport regulations can be found at www.stihl.com/safety-data-sheets.

15 Storing

15.1 Storing the chainsaw

- ▶ Switch off the chainsaw, engage the chain brake and remove the battery.
- ▶ Push the chain scabbard over the guide bar so that it completely covers the guide bar.
- ▶ Comply with the following conditions when storing the chainsaw:
 - The chainsaw cannot tip over or move.
 - The chainsaw is out of reach of children.
 - The chainsaw is clean and dry.
- ▶ If the chainsaw is stored for longer than 30 days: Remove the guide bar and saw chain.

15.2 Storing the Battery

STIHL recommends keeping the battery in a charging state between 40% and 60 % (2 green LEDs lit).

- ▶ The battery should be stored in such a way that the following conditions are fulfilled:
 - The battery is out of the reach of children.
 - The battery is clean and dry.
 - The battery is in an enclosed space.
 - Keep the battery separate from the chainsaw.
 - If the battery is stored in the charger, disconnect the mains plug and store the battery at a state of charge between 40% and 60% (2 lit green LEDs).
 - Do not store the battery outside of the specified temperature limits, 20.5.

NOTICE

- If the battery is not stored as described in this User Manual, the battery may become deeply discharged and irreparably damaged.
 - ▶ Charge a discharged battery before storing it. STIHL recommends keeping the battery state of charge between 40% and 60% (2 lit green LEDs).
 - ▶ Store the battery separately from the chainsaw.

16 Cleaning

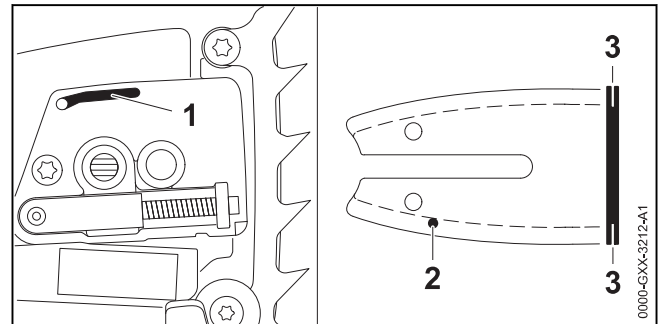
16.1 Cleaning the chainsaw

- ▶ switch off chain saw, engage chain brake and remove battery
- ▶ Clean the chainsaw with a damp cloth or STIHL resin solvent.
- ▶ Clean vents with a paintbrush.
- ▶ Remove the chain sprocket cover.
- ▶ Clean the area around the chain sprocket with a damp cloth or STIHL resin solvent.

- ▶ Remove foreign objects from the battery compartment and clean the battery compartment with a damp cloth.
- ▶ Clean the electrical contacts in the battery compartment with a paintbrush or soft brush.
- ▶ Fit the chain sprocket cover.

16.2 Cleaning the Guide Bar and Saw Chain

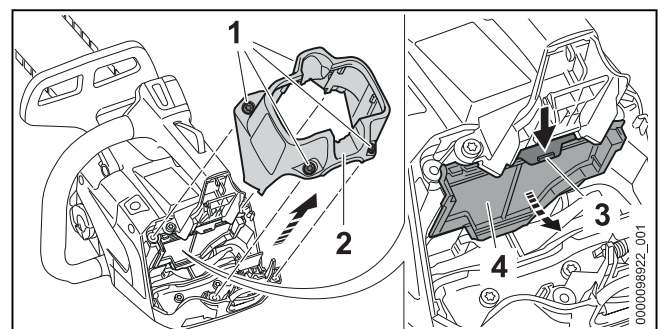
- ▶ Switch off chainsaw, engage the chain brake and remove the battery.
- ▶ Remove the guide bar and saw chain.



- ▶ Clean the oil port (1), oil inlet hole (2) and bar groove (3) with a soft brush or STIHL resin solvent.
- ▶ Clean the saw chain with a soft brush or STIHL resin solvent.
- ▶ Mount the guide bar and saw chain.

16.3 Cleaning the fleece air filter

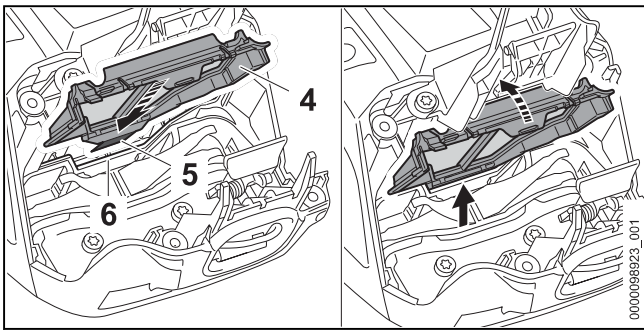
- ▶ Switch off chainsaw, engage the chain brake and remove the battery.



- ▶ Turn the screws (1) counterclockwise until the cover (2) can be removed.
- ▶ Remove shroud (2).
- ▶ Press the latch (3) and remove the air filter (4).
- ▶ Dust down the air filter (4).
- ▶ If the air filter (4) is damaged: Install a new air filter (4).
- ▶ From the clean side, blow off the air filter (4) with compressed air.

**WARNING**

- If detergents come into contact with the skin or eyes, the skin or eyes may be irritated.
 - ▶ Observe the user manual for the detergent.
 - ▶ Avoid contact with detergents.
 - ▶ If skin contact occurs: Wash affected areas of skin with plenty of water and soap.
 - ▶ If eye contact occurs: Flush eyes with plenty of water for at least 15 minutes and consult a doctor.
-
- ▶ Spray the outside and inside of the air filter (4) with STIHL special cleaner or a cleaning agent with a pH value higher than 12.
 - ▶ Allow STIHL special cleaner or cleaning agent to act for 10 minutes.
 - ▶ Rinse the clean side of the air filter (4) under running water.
 - ▶ Rinse the dirty side of the air filter (4) under running water.
 - ▶ Allow the air filter (4) to dry in the air.



- ▶ Position the air filter (4) so that the latch (5) engages in the recess (6).
- ▶ Close the air filter (4).
The air filter (4) audibly engages.
- ▶ Fit the cover (2).
- ▶ Insert screws (1) and tighten them.

16.4 Cleaning the Battery

- ▶ Clean the battery with a damp cloth.

17 Maintenance

17.1 Maintenance intervals

Maintenance intervals depend on the ambient conditions and the operating conditions. STIHL recommends the following maintenance intervals:

Chain brake

- ▶ Have a STIHL dealer service the chain brake in the following intervals:
 - Full-time use: every three months
 - Part-time use: every six months
 - Occasional use: once a year

Weekly

- ▶ Check the chain sprocket.
- ▶ Check and deburr the guide bar.
- ▶ Check and sharpen the saw chain.

Monthly

- ▶ Clean the air filter.
- ▶ When used extensively for palm care: Have the area behind and around the chain sprocket cleaned by a STIHL authorized dealer.

Half-yearly

- ▶ Have the oil tank cleaned by a STIHL authorized dealer.
- ▶ Have the fan housing cleaned by a STIHL authorized dealer.

17.2 Deburring the Guide Bar

A burr can build up on the outer edge of the guide bar.

- ▶ Remove burr with a flat file or a STIHL guide bar dressing tool.
- ▶ If you have any queries: Contact your STIHL servicing dealer.

17.3 Sharpening the saw chain

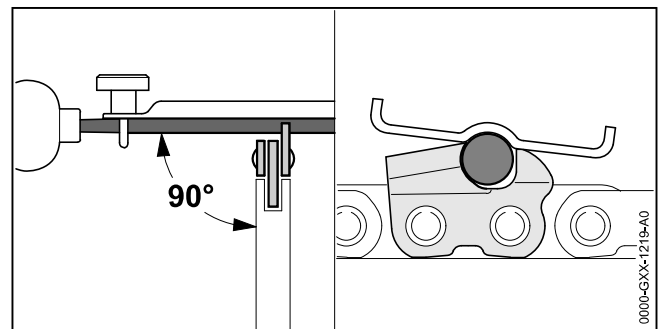
Sharpening saw chains correctly takes a lot of practice.

STIHL files, STIHL filing aids, STIHL sharpeners and STIHL 2-in-1 file holders and the brochure "Sharpening STIHL Saw Chains" will help you sharpen the blade correctly. To obtain the brochure visit <http://www.stihl.com/sharpening-brochure>.

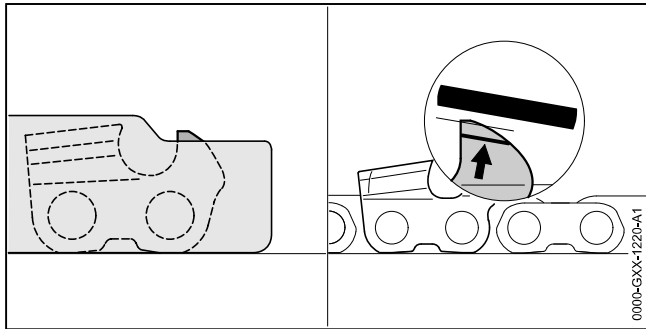
STIHL recommends having saw chains sharpened by a STIHL authorized dealer.

**WARNING**

- The saw chain's cutters are sharp. There is a risk of cutting oneself.
 - ▶ Wear work gloves made of robust material.



- ▶ File each cutter with a round file so that the following conditions are met:
 - The round file matches the pitch of the saw chain.
 - The round file is pushed from the inside to the outside.
 - The round file is pushed at a right angle to the guide bar.
 - Maintain a filing angle of 30°.



- ▶ File the depth gauges with a flat file so that they are flush with the STIHL filing gauge and parallel to the wear mark. The STIHL filing gauge must match the saw chain pitch.
- ▶ If you are unsure: Contact a STIHL authorized dealer.

18 Repairing

18.1 Repairing the Chainsaw and Battery

The chainsaw, guide bar, saw chain and battery cannot be repaired by the user.

- ▶ If the saw, guide bar or saw chain is damaged: Do not use your saw, guide bar or saw chain, and contact your STIHL servicing dealer for assistance.
- ▶ If the battery has a malfunction or is damaged: Replace the battery.

19 Troubleshooting

19.1 Troubleshooting the chainsaw or battery

Error	LEDs on the battery	Cause	Remedy
Saw does not start when switched on.	1 LED flashing green.	The state of charge of the battery is too low.	▶ Recharge the battery fully as described in the user manual for the STIHL AL 101, 301, 301-4, 501 chargers.
	1 LED lights up steady red.	The battery is too warm or too cold.	▶ Engage chain brake and remove battery. ▶ Allow the battery to cool down or warm up.
	3 LEDs flash red.	Chainsaw fault.	▶ Engage chain brake and remove battery. ▶ Clean electrical contacts in the battery compartment. ▶ Insert the battery. ▶ Disengage the chain brake. ▶ Switch on the chainsaw. ▶ If 3 LEDs continue to flash red: Do not use your chainsaw and contact your STIHL servicing dealer for assistance.
	3 LEDs light up red.	Chainsaw is too hot.	▶ Engage chain brake and remove battery. ▶ Allow the chainsaw to cool down.
	4 LEDs flash red.	There is an error in the battery.	▶ Engage the chain brake, remove and refit the battery. ▶ Disengage the chain brake. ▶ Switch on the chainsaw. ▶ If 4 LEDs continue to flash red: Do not use the battery and instead contact a STIHL authorized dealer for assistance.
		No electrical contact between the chainsaw and battery.	▶ Engage chain brake and remove battery. ▶ Clean electrical contacts in the battery compartment. ▶ Insert the battery.
		Chainsaw or battery damp.	▶ Allow chainsaw or battery to dry, 20.6.
Saw cuts out during operation.	3 LEDs light up red.	Chainsaw is too hot.	▶ Engage chain brake and remove battery. ▶ Allow the chainsaw to cool down.

Error	LEDs on the battery	Cause	Remedy
		There is an electrical error.	▶ Engage the chain brake, remove and refit the battery. ▶ Switch on the chainsaw.
Chainsaw run-time is too short.		The battery is not fully charged.	▶ Recharge the battery fully as described in the User Manual for the STIHL AL 101, 301, 301-4, 501 chargers.
		The battery service life has been exceeded.	▶ Replace battery.
Smell of smoke or burning in the cutting area.		The saw chain has not been correctly sharpened.	▶ Sharpen chain as specified.
		Insufficient saw chain oil in the oil tank.	▶ Fill up with saw chain oil.
		The chain lubrication system is supplying insufficient saw chain oil.	▶ Increase oil feed rate.
		The saw chain is over-tensioned.	▶ Tension the saw chain as specified.
		The chainsaw is not being used properly.	▶ Have correct use explained and then practice correct use.
"SAW CHAIN LUBRICANT" LED lights up in red.		Insufficient saw chain oil in the oil tank.	▶ Fill up with saw chain oil.
		Insufficient saw chain oil in the oil sensor.	▶ Set the oil feed rate to maximum output quantity. ▶ Switch on chainsaw, fully press trigger and let chainsaw run for approximately 1 minute. The "SAW CHAIN OIL" LED extinguishes. The oil pump can be adjusted for work. ▶ If the "SAW CHAIN OIL" LED continues to light up in red: Do not use your chainsaw and contact your STIHL authorized dealer for assistance.
		The saw chain oil is unsuitable, polluted or too old.	▶ Fill in and use new saw chain oil,  7.3. ▶ If the "SAW CHAIN OIL" LED continues to light up in red: Do not use your chainsaw and contact your STIHL authorized dealer for assistance.
"SAW CHAIN LUBRICANT" LED flashes red.		The saw chain oil sensor is defective.	▶ Do not use the chainsaw and contact your STIHL authorized dealer.
The STIHL connected app is unable to find the battery with  .		The Bluetooth® radio interface on the battery or mobile device is deactivated.	▶ Activate the Bluetooth® radio interface on the battery or mobile device.
		Excessive distance between the battery and the mobile device.	▶ Reduce the distance,  20. ▶ If the STIHL connected app is still unable to find the battery: Contact a STIHL authorized dealer.

19.2 Product Support and Assistance on Use

Product support and assistance on use are available from STIHL servicing dealers.

For contacts and other information, please visit <https://support.stihl.com> or www.stihl.com.

20 Specifications

20.1 STIHL MSA 220.1 T, MSA 220.1 TC Chainsaw

- Permitted batteries:
 - STIHL AP (except STIHL AP 100)
 - STIHL AR
- Weight without battery, guide bar and saw chain: 2.7 kg
- Max. oil tank capacity: 220 cm³ (0.220 l)
- Degree of protection: IPX4 (protection against splash water from any direction)

For runtime, see www.stihl.com/battery-life.

20.2 Chain Sprockets and Chain Speeds

The following chain sprockets may be used:

- 6-tooth for 3/8" P
 - Maximum chain speed: 23.3 m/s

20.3 Minimum Groove Depth of Guide Bars

The minimum groove depth depends on the pitch of the guide bar.

- 3/8" P: 5 mm

20.4 STIHL AP Battery

- Battery technology: Lithium-ion
- Voltage: 36 V
- Capacity in Ah: see rating label
- Energy content in Wh: see rating label
- Weight in kg: See rating label
- Bluetooth® radio interface (only for batteries with ):
 - Data connection: Bluetooth® 5.1. The mobile device must be compatible with Bluetooth® Low Energy 5.0 and support Generic Access Profile (GAP).
 - Frequency band: ISM band 2.4 GHz
 - Maximum RF power transmitted: 1 mW
 - Signal range: approx. 10 m. The signal strength depends on the ambient conditions and the mobile device. The signal range can vary greatly depending on local conditions and the receiver used. The range may be perceptibly reduced inside enclosed rooms

and through metal barriers (such as walls, shelves or cases).

- Mobile device operating system requirements: Android or iOS (current version or higher)

The power output of the battery may vary depending on the battery product used.

20.5 Temperature limits



WARNING

- The battery is not protected against all ambient conditions. If the battery is exposed to certain environmental conditions, it may catch fire or explode. This may result in serious injury to people and damage to property.
 - ▶ Do not charge the battery below -20°C or above 50°C.
 - ▶ Do not use the chainsaw or battery below -20 °C or above 50 °C.
 - ▶ Do not store the chainsaw or battery below -20°C or above +70°C.

20.6 Recommended temperature ranges

For optimum performance of the chainsaw and battery, note the following temperature ranges:

- Charging: 5°C to 40°C
- Use: - 10 °C to + 40 °C
- Storage: - 20 °C to + 50 °C

If the battery is charged, used or stored outside the recommended temperature ranges, performance may be restricted.

If the battery is wet or moist, allow the battery to dry for at least 48 h between 15°C and 50°C and with less than 70% humidity. Higher humidity may extend the drying time.

20.7 Sound and vibration values

STIHL recommends wearing hearing protection.

- Sound pressure level L_{pA} measured according to EN ISO 22868: 94 dB(A), uncertainty K_{pA} : 2 dB(A)
- Sound power level L_{WA} measured according to EN ISO 22868: 104 dB(A), uncertainty K_{WA} : 2 dB(A)
- Guaranteed sound power level $L_{WA,d}$ measured according to 2000/14/EC: 106 dB(A)
- Vibration value a_{hv} measured according to EN ISO 22867:
 - Control handle: 3.4 m/s², uncertainty K_a : 2.0 m/s²

- Handlebar: 3.0 m/s², uncertainty K_a: 2.0 m/s²
- Vibration value p_F determined according to EN ISO 5349-3:
 - Control handle: 121 m/s², uncertainty K_p: 27 m/s²
 - Handlebar: 133 m/s², uncertainty K_p: 27 m/s²

The sound and vibration values indicated were measured according to a standardized test method and can be used as a basis for comparing electric power tools. The actual sound and vibration levels may vary from the values indicated, depending on the type of application and the accessories used. The sound and vibration lev-

els indicated can be used for an initial estimate of the sound and vibration load. The actual sound and vibration stress has to be estimated. The times can be taken into account in the estimate when the electric power tool is switched off and also when it is switched on but running without any load.

20.8 REACH

REACH is an EC regulation and stands for the Registration, Evaluation, Authorisation and Restriction of Chemical substances.

For information on compliance with the REACH regulation see www.stihl.com/reach.

21 Bar and Chain Combinations

21.1 STIHL MSA 220.1 T, MSA 220.1 TC Chainsaw

Combinations not listed (or other combinations that are not consistent with chainsaw standards) increase the risk of injury through kickback.

Pitch	Drive link gauge/groove width	Length	Guide bar	Number of teeth, sprocket nose	Number of drive links	Saw chain
3/8" P	1.1 mm	30 cm	Light 04	9	44	61 PMM3 (Type 3610) 61 PS3 Pro (3699)
		35 cm ¹⁾			50	
		40 cm ²⁾			55	
3/8" P	1.3 mm	30 cm	Light 04 Light P04	9	44	63 PM3 (3636) 63 PS3 (3616)
		35 cm ¹⁾			50	
		40 cm ²⁾			55	

The cutting length of a guide bar depends on the chainsaw and the saw chain being used. The actual cutting length of a guide bar may be less than the specified length.

¹⁾If this guide bar is used, the chainsaw must be used only with a STIHL AP battery inserted directly in the chainsaw or with a 2-in-1 AP webbing sling adapter.

²⁾If this guide bar is used, the chainsaw may be used only with a STIHL AP battery inserted directly in the chainsaw.

22 Spare Parts and Accessories

22.1 Spare parts and accessories

STIHL  These symbols indicate original STIHL spare parts and original STIHL accessories.

STIHL recommends the use of original STIHL spare parts and accessories.

Despite ongoing market observation, STIHL is unable to judge the reliability, safety and suitability of other manufacturers' spare parts and accessories; accordingly, STIHL cannot warrant for the use of those parts.

Original STIHL spare parts and original STIHL accessories are available from STIHL dealers.

23 Disposal

23.1 Disposing of Chainsaw and Battery

Contact the local authorities or your STIHL dealer for information on disposal.

Improper disposal can be harmful to health and pollute the environment.

- Take STIHL products including packaging to a suitable collection point for recycling in accordance with local regulations.

- ▶ Do not dispose with domestic waste.

24 EU conformity

The EU Declaration of Conformity is available at stihl.link/compliance.

Further information and a form for reporting security vulnerabilities are available at vdp.stihl.com.

25 Addresses

www.stihl.com

26 General Power Tool Safety Warnings

26.1 Introduction



WARNING

- **Read all safety warnings, instructions, illustrations and specifications provided with this power tool.** Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury. **Save all warnings and instructions for future reference.**

The term "electric power tool" in the safety warnings refers to mains-operated (corded) power tools or battery-operated (cordless) power tools.

26.2 Work area safety

- Keep work area clean and well lit.** Cluttered or dark areas invite accidents.
- Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust.** Power tools create sparks which may ignite the dust or fumes.
- Keep children and bystanders away while operating a power tool.** Distractions can cause you to lose control.

26.3 Electrical safety

- Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.

26.4 Personal safety

- Stay alert, watch what you are doing and use common sense when operating a power tool.** Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while

operating power tools may result in serious personal injury.

- Use personal protective equipment. Always wear eye protection.** Protective equipment such as a dust mask, non-skid safety shoes, hard hat or hearing protection used for appropriate conditions will reduce personal injuries.
- Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool.** Carrying power tools with your finger on the switch or energising power tools that have the switch on invites accidents.
- Remove any adjusting key or wrench before turning the power tool on.** A wrench or a key left attached to a rotating part of the power tool may result in personal injury.
- Do not overreach. Keep proper footing and balance at all times.** This enables better control of the power tool in unexpected situations.
- Dress properly. Do not wear loose clothing or jewellery. Keep your hair and clothing away from moving parts.** Loose clothes, jewellery or long hair can be caught in moving parts.
- If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used.** Use of dust collection can reduce dust-related hazards.
- Do not let familiarity gained from frequent use of tools allow you to become complacent and ignore tool safety principles.** A careless action can cause severe injury within a fraction of a second.

26.5 Power tool use and care

- Do not force the power tool. Use the correct power tool for your application.** The correct power tool will do the job better and safer at the rate for which it was designed.
- Do not use the power tool if the switch does not turn it on and off.** Any power tool that cannot be controlled with the switch is dangerous and must be repaired.
- Disconnect the plug from the power source and/or remove the battery pack, if detachable, from the power tool before making any adjustments, changing accessories, or storing power tools.** Such preventive safety

measures reduce the risk of starting the power tool accidentally.

- d) **Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool.** Power tools are dangerous in the hands of untrained users.
- e) **Maintain power tools and accessories.** Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use. Many accidents are caused by poorly maintained power tools.
- f) **Keep cutting tools sharp and clean.** Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
- g) **Use the power tool, accessories and tool bits etc. in accordance with these instructions, taking into account the working conditions and the work to be performed.** Use of the power tool for operations different from those intended could result in a hazardous situation.
- h) **Keep handles and grasping surfaces dry, clean and free from oil and grease.** Slippery handles and grasping surfaces do not allow for safe handling and control of the tool in unexpected situations.

26.6 Battery tool use and care

- a) **Recharge only with the charger specified by the manufacturer.** A charger that is suitable for one type of battery pack may create a risk of fire when used with another battery pack.
- b) **Use power tools only with specifically designated battery packs.** Use of any other battery packs may create a risk of injury and fire.
- c) **When battery pack is not in use, keep it away from other metal objects, like paper clips, coins, keys, nails, screws or other small metal objects, that can make a connection from one terminal to another.** Shorting the battery terminals together may cause burns or a fire.
- d) **Under abusive conditions, liquid may be ejected from the battery; avoid contact.** If contact accidentally occurs, flush with water. If liquid contacts eyes, additionally seek medical help. Liquid ejected from the battery may cause irritation or burns.

- e) **Do not use a battery pack or tool that is damaged or modified.** Damaged or modified batteries may exhibit unpredictable behaviour resulting in fire, explosion or risk of injury.
- f) **Do not expose a battery pack or tool to fire or excessive temperature.** Exposure to fire or temperature above 130 °C may cause explosion.
- g) **Follow all charging instructions and do not charge the battery pack or tool outside the temperature range specified in the instructions.** Charging improperly or at temperatures outside the specified range may damage the battery and increase the risk of fire.

26.7 Service

- a) **Have your power tool serviced by a qualified repair person using only identical replacement parts.** This will ensure that the safety of the power tool is maintained.
- b) **Never service damaged battery packs.** Service of battery packs should only be performed by the manufacturer or authorized service providers.

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