

**STIHL**<sup>®</sup>

**STIHL MS 193 T**

Instruction Manual





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**Dear Customer,**

**Thank you for choosing a quality engineered STIHL product.**

**It has been built using modern production techniques and comprehensive quality assurance. Every effort has been made to ensure your satisfaction and trouble-free use of the product.**

**Please contact your dealer or our sales company if you have any queries concerning this product.**

**Your**



**Dr. Nikolas Stihl**

# STIHL®

MS 193 T, MS 193 TC

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## Guide to Using this Manual

This Instruction Manual refers to a STIHL chain saw, also called a machine in this Instruction Manual.

### Pictograms

Pictograms that appear on the machine are explained in this Instruction Manual.

Depending on the machine and equipment version, the following pictograms may appear on the machine.



Fuel tank; fuel mixture of gasoline and engine oil



Tank for chain oil; chain oil



Engage and release chain brake



Coasting brake



Direction of chain travel



Ematic; chain oil flow adjustment



Tension saw chain



Intake air baffle: winter operation



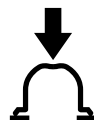
Intake air baffle: summer operation



Handle heating



Actuate decompression valve



Actuate manual fuel pump

### Symbols in text



**WARNING**

Warning where there is a risk of an accident or personal injury or serious damage to property.



**NOTICE**

Caution where there is a risk of damaging the machine or its individual components.

### Engineering improvements

STIHL's philosophy is to continually improve all of its products. For this reason we may modify the design, engineering and appearance of our products periodically.

Therefore, some changes, modifications and improvements may not be covered in this manual.

## Safety Precautions



This **special chain saw** shall be used only by persons who are trained in special cutting and working techniques.



Due to the special **handle design** (closely spaced handles) there is an **increased risk of injury** using this kind of saw (cut injuries due to uncontrolled reactive forces of the chain saw). Special safety precautions must be observed to reduce the risk of personal injury when working with a chainsaw because of the very high chain speed and very sharp cutters.



It is important that you read the instruction manual before first use and keep it in a safe place for future reference. Non-observance of the instruction manual may result in serious or even fatal injury.

### General

Observe all applicable local safety regulations, standards and ordinances.

The use of noise emitting power tools may be restricted to certain times by national or local regulations.

If you have not used this model before: Have your dealer or other experienced user show you how to operate your machine or attend a special course in its operation.

Minors should never be allowed to use a chainsaw. Exceptions to this rule are young persons older than 16 who have been trained in special cutting techniques with the tree surgery saw.

Keep bystanders, especially children, and animals away from the work area.

The user is responsible for avoiding injury to third parties or damage to their property.

Do not lend or rent your chain saw without the instruction manual. All users must be specially trained in tree surgery work with a tree surgery saw and be familiar with this model and its operation.

To operate a chain saw you must be rested, in good physical condition and mental health. If you have any condition that might be aggravated by strenuous work, check with your doctor before operating a chainsaw.

Do not operate the chain saw if you are under the influence of any substance (drugs, alcohol) which might impair vision, dexterity or judgment.

To reduce the risk of accidents or injury, put off the work in poor weather conditions (rain, snow, ice, wind).

Persons with pacemakers only: The ignition system of your chainsaw produces an electromagnetic field of a very low intensity. This field may

interfere with some pacemakers. To reduce health risks, STIHL recommends that persons with pacemakers consult their physician and the pacemaker manufacturer before operating this power tool.

### Intended Use

Tree surgery chainsaws are special-purpose saws equipped with a top handle. They are designed specifically for tree surgery and maintenance in the crown of the standing tree.

Chainsaw operators must be properly secured while working in a tree (e.g. lift bucket, personal safety equipment, safety harness).

The chainsaw may be used for cutting wood and wooden objects only.

It must not be used for any other purpose because of the increased risk of accidents.

They must not be used for felling trees or cutting firewood. Normal chainsaws with wider spaced handles are recommended for such operations.

Never attempt to modify your saw in any way since this may increase the risk of personal injury. STIHL excludes all liability for personal injury and damage to property caused while using unauthorized attachments.

### Clothing and Equipment

Wear proper protective clothing and equipment.



Clothing must be sturdy and snug-fitting, but allow complete freedom of movement. Wear snug-fitting clothing with **cut-retardant pads** for feet, legs, hands and forearms – an overall, not a loose-fitting jacket.

Avoid clothing that could get caught on branches, brush or moving parts of the machine. Do not wear a scarf, necktie or jewelry. Tie up and confine long hair (headscarf, cap, hard hat, etc.).



Wear suitable **safety shoes** – with cut-retardant material, non-slip soles and steel toe caps.



#### WARNING



To reduce the risk of eye injuries, wear tight-fitting safety goggles conforming to standard EN 166. Make sure that the safety goggles fit correctly.

Wear a face shield and make sure it fits correctly.

Wear "personal" hearing protection – for example, ear defenders.

Wear a hard hat with a chin strap wherever there is any risk of falling objects.



Wear sturdy protective gloves made of a resistant material (e.g. leather) – with cut-retardant material.

STIHL can supply a comprehensive range of personal protective clothing and equipment.

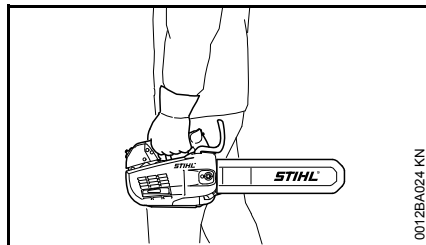
Use a personal fall arrest system.

Use only certified equipment that is suitable for the application concerned.

Check the condition of the equipment before use and replace broken parts.

#### Transporting

Always stop the engine, engage the chain brake and fit the chain guard (scabbard) before carrying the saw short distances. This avoids the risk of the chain running unintentionally.



Always carry the saw by the control handle – with the hot muffler away from your body – the guide bar must point to the rear. To reduce the risk of serious burn injuries, avoid touching hot parts of the machine, especially the surface of the muffler.

In vehicles: Properly secure your saw to prevent turnover, fuel spillage and damage.

#### Cleaning

Clean plastic parts with a cloth. Harsh detergents can damage the plastic.

Clean the dust and dirt off the machine – do not use any grease solvents for this purpose.

Clean the ventilation slots if necessary.

Do not use a high-pressure cleaner to clean the machine. The hard jet of water can damage parts of the machine.

#### Accessories

Only use those tools, guide bars, chains, chain sprockets, accessories or technically equivalent components that have been approved by STIHL for this machine. If you have any questions in this respect, consult a servicing dealer. Use only high quality tools and accessories. Otherwise, there may be a risk of accidents and damage to the machine.

STIHL recommends the use of genuine STIHL tools, guide bars, chains, chain sprockets and accessories. They are specifically designed to match your model and meet your performance requirements.

#### Refuelling



**Gasoline is an extremely flammable fuel** – keep clear of naked flames and fire – do not spill any fuel – no smoking.

Switch off the engine before refuelling.

Never refuel the machine while the engine is still hot – the fuel may spill over – **risk of fire!**

Open the fuel filler cap carefully so that any excess pressure is relieved gradually and fuel does not splash out.

The machine may only be refuelled in a well ventilated place. Clean the machine immediately if fuel is spilled. Do not spill fuel over your clothing – contaminated clothing must be changed immediately.

The machines can be equipped with the following filler caps as standard:

#### Cliplock filler cap (bayonet-type)



Place the cliplock filler cap (bayonet-type) in position, turn as far as stop and fold the cliplock down.

This helps reduce the risk of unit vibrations causing an incorrectly tightened filler cap to loosen or come off and spill quantities of fuel.



Look out for leaks! Never start the engine if fuel has been spilled or is leaking – **Fatal burns may result!**


#### Before Starting Work

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Check that your saw is properly assembled and in good condition – refer to appropriate chapters in the instruction manual.

- Check the fuel system for leaks, paying special attention to visible parts such as the tank cap, hose connections and the manual fuel pump (on machines so equipped). If

there are any leaks or damage, do not start the engine – **risk of fire**. Have your saw repaired by a servicing dealer before using it again.

- Check operation of chain brake, front hand guard
- Correctly mounted guide bar
- Correctly tensioned chain
- The trigger and trigger lockout must move freely and spring back to the idle position when they are released.
- Master Control lever must move easily to **STOP, 0** or 
- Check that the spark plug boot is secure – a loose boot may cause arcing that could ignite combustible fumes **and cause a fire**.
- Never attempt to modify the controls or safety devices in any way.
- Keep the handles dry and clean – free from oil and dirt – for safe control of the saw.
- Make sure there is sufficient fuel and chain oil in the tanks.

**To reduce the risk of personal injury**, do not operate your saw if it is damaged or not properly assembled.

#### Starting the Saw

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Start the saw on level ground only. Make sure you have a firm footing. Hold the saw firmly. To reduce the risk of injury from the rotating chain, check that the cutting attachment is not touching any object or the ground .

The chainsaw is a one-person saw. Do not allow other persons in the work area – even when starting.

Do not attempt to start the saw when the saw chain is in a cut.

Starting the saw in a tree is very dangerous since the user may lose control of the machine – **risk of injury**.

The tree surgery saw should be checked, fueled, started and warmed up by an assistant on the ground before it is transported up to the operator in the tree.

Start the engine at least 3 meters from the fueling spot, outdoors only.

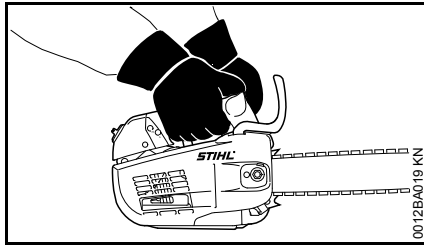
**To reduce risk of chain rotation and personal injury**, lock the chain with the chain brake before starting.

Do not drop start the power tool – start the engine as described in the instruction manual.

#### During Operation

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When working in the tree, always secure the chainsaw with a rope – tie it to the ring and attach it to the lifeline. Always engage the chain brake before letting the chainsaw hang by the rope.



**To reduce the risk of accidents and injuries, always hold your saw firmly with both hands:**

Right hand on the control handle, even if you are left-handed. To ensure safe control, wrap your fingers tightly around both handles.



One-handed operation is particularly dangerous, e.g. when cutting dry, knotty and dead wood, the chain may not enter the cut properly. The resultant reactive forces may cause the saw to skate or bounce on the limb and slide out of control. **This increases the risk of serious or even fatal injury.**



Use the tree surgery chainsaw with one hand only:

- if two-handed cutting is not possible and
- if one hand is required for support during the cut and

- if the saw is held firmly and
- if all parts of your body are clear of the cutting attachment.

During one-handed cutting:

- never support yourself on the limb being cut
- never cut with the bar nose
- never attempt to hold falling limbs

Make sure you always have good balance and secure footing. **To avoid slipping**, take special care when the bark is wet.

In the event of impending danger or in an emergency, switch off the engine immediately – move the Master Control lever in the direction of **STOP, 0** or **0**.

Never leave a running saw unattended.

**Take special care in slippery conditions** – damp, snow, ice, on slopes, uneven ground and freshly debarked logs.

**Watch out for obstacles** such as tree stumps, roots and ditches which could cause you to trip or stumble.

Do not work alone – keep within calling distance of other persons trained in first aid who can provide assistance in an emergency. Helpers at the cutting site must also wear protective clothing (hard hat) and stand well clear of the branches being cut.

Be particularly alert and cautious when wearing hearing protection because your ability to hear warnings (shouts, alarms, etc.) is restricted.

**To reduce the risk of accidents**, take a break in good time to avoid tiredness or exhaustion.

The dusts (e.g. sawdust), vapor and smoke produced during operation may be dangerous to health. If dust levels are very high, wear a suitable respirator.

When the engine is running: Note that the chain continues to rotate for a short period after you let go of the throttle trigger (flywheel effect).

**To reduce the risk of fire, do not smoke** while operating or standing near your chainsaw. Note that combustible fuel vapor may escape from the fuel system.

Check the saw chain at regular short intervals during operation or immediately if there is a noticeable change in cutting behavior:

- Shut off the engine and wait until the chain comes to a complete standstill.
- Check condition and proper mounting.
- Check sharpness.

Do not touch the chain while the engine is running. If the chain becomes jammed by an obstruction, switch off the engine immediately before attempting to remove the obstruction – **risk of injury**.

Always shut off the engine before leaving the saw unattended.

Shut off the engine before changing the saw chain. This avoids the **risk of injury** from the engine starting unintentionally.

**To reduce risk of fire**, keep hot exhaust gases and hot muffler away from easily combustible materials (e.g. wood chips, bark, dry grass, fuel). Mufflers with a catalytic converter can become particularly hot.



Never operate your saw without proper chain lubrication – check oil level regularly during operation. Stop work immediately if the oil level is too low and refill the oil tank – see also chapters on "Filling Chain Oil Tank" and "Checking Chain Lubrication".

If your saw is subjected to unusually high loads for which it was not designed (e.g. heavy impact or a fall), always check that it is in good condition before continuing work – see also "Before Starting Work".

Check the fuel system in particular for leaks and make sure the safety devices are working properly. Do not continue operating your saw if it is damaged. In case of doubt, have the unit checked by your servicing dealer.

Make sure the idle speed setting is correct. The chain must not run when the engine is idling with the throttle trigger released. Check and correct the idle speed setting regularly. If the chain continues to rotate when the engine is idling, have your dealer make proper adjustments or repairs.



The chain saw produces poisonous exhaust gases as soon as the engine starts. These gases may be colourless and odourless and may contain unburnt hydrocarbons and benzene. Never work with the machine indoors or in poorly ventilated areas, even if your machine is equipped with a catalytic converter.

Ensure proper ventilation when working in trenches, hollows or other confined locations – **risk of fatal injury from breathing toxic fumes!**

If you feel sick, have a headache, vision problems (e. g., your field of vision gets smaller), hearing problems, dizziness or inability to concentrate, stop work immediately. Such symptoms may be caused by an excessively high concentration of exhaust emissions – **risk of accident!**

### After finishing work

Switch off the motor, engage the chain brake and attach the chain scabbard.

### Storage

When the machine is not in use, it should be stored in such a way that no-one is endangered. Secure the machine against unauthorised use.

Store the machine in a safe, dry room.

### Vibrations

Prolonged use of the power tool may result in vibration-induced circulation problems in the hands (whitefinger disease).

No general recommendation can be given for the length of usage because it depends on several factors.

The period of usage is prolonged by:

- Hand protection (wearing warm gloves)
- Work breaks

The period of usage is shortened by:

- Any personal tendency to suffer from poor circulation (symptoms: frequently cold fingers, tingling sensations).
- Low outside temperatures.
- The force with which the handles are held (a tight grip restricts circulation).

Continual and regular users should monitor closely the condition of their hands and fingers. If any of the above symptoms appear (e.g. tingling sensation in fingers), seek medical advice.

### Maintenance and repairs

Always switch off the engine before any repair, cleaning or maintenance work and any work on the chain. **Risk of injury** if the engine starts inadvertently!


Exception: adjustment of carburettor and idle speed.

The machine must be serviced regularly. Do not attempt any maintenance or repair work not described in the Instruction Manual. All other work should be carried out by a servicing dealer.

STIHL recommends that maintenance and repair work be carried out only by authorised STIHL dealers. STIHL dealers receive regular training and are supplied with technical information.

Use only high-quality spare parts. Otherwise, there may be a risk of accidents and damage to the machine. If you have any questions in this respect, consult a servicing dealer.

Do not modify the machine in any way – this may increase the risk of personal injury – **risk of accidents!**

To reduce the **risk of fire** due to ignition outside the cylinder, move the master control level to **STOP, 0** or  before turning the engine over on the starter when the spark plug boot is removed or the spark plug is unscrewed!

Do not service or store the machine near a naked flame – **risk of fire** due to the fuel.

Check fuel cap regularly for tightness.

Use only spark plugs that are in perfect condition and have been approved by STIHL – see "Specifications".

Check ignition lead (insulation in good condition, secure connection).

Check that the muffler is in perfect working condition.

Do not use the machine if the muffler is damaged or missing – **risk of fire, damage to hearing!**

Never touch a hot muffler – **risk of burns!**

The condition of the anti-vibration elements influences vibration behaviour – inspect anti-vibration elements periodically.

**Inspect chain catcher** – replace if damaged.

### Switch off the engine

- To check the chain tension
- To retension the chain
- To replace the chain
- For remedying malfunctions

**Observe sharpening instructions** – for safe and proper handling, always keep the chain and guide bar in flawless condition. Keep the chain properly sharpened, tensioned and well lubricated.

Change chain, guide bar and chain sprocket in due time.

Regularly check that the clutch drum is in perfect working condition.

Always store fuel and chain lubricant only in the specified type of containers and ensure they are correctly labelled. Store in a dry, cool and secure place protected against light and sunlight.

In the event of a chain brake malfunction, switch off the machine immediately – **risk of injury!** Consult a servicing dealer – do not use the machine until the malfunction has been remedied, see "Chain brake".

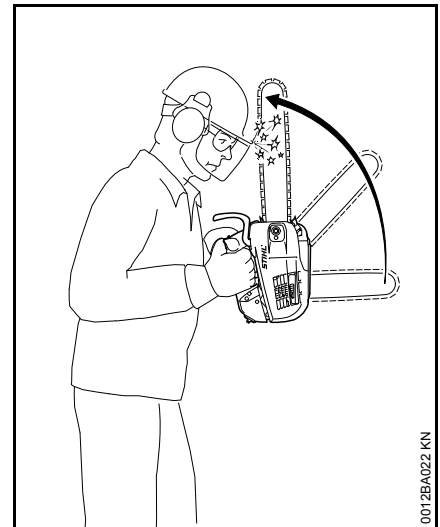
## Reactive Forces

The most common reactive forces that occur during cutting are: kickback, pushback and pull-in.

### Dangers of kickback

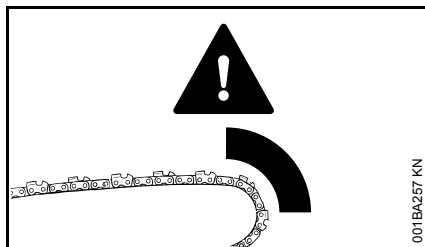


**Kickback can result in serious or fatal injury.**



Kickback occurs when the saw is suddenly thrown up and back in an uncontrolled arc towards the operator.

### Kickback occurs, e.g.



- when the upper quadrant of the bar nose unintentionally contacts wood or another solid object, e.g. when another limb is touched accidentally during limbing.
- when the chain at the nose of the guide bar is pinched in the cut.

### QuickStop chain brake:

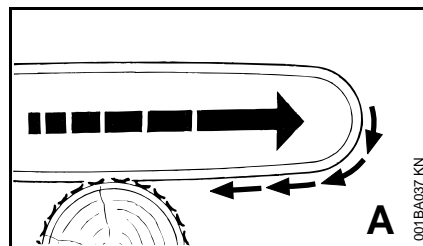
This device reduces the risk of injury in certain situations – it cannot prevent kickback. If activated, the brake stops the saw chain within a fraction of a second – for a description of this device refer to chapter on "Chain Brake" in this manual.

### To reduce the risk of kickback

- Work cautiously and avoid situations which could cause kickback.
- Hold the saw firmly with both hands and maintain a secure grip.
- Always cut at full throttle.
- Be aware of the location of the guide bar nose at all times.

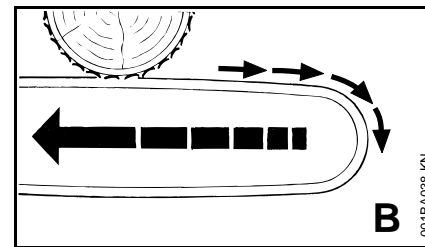
- Do not cut with the bar nose.
- Take special care with small, tough limbs, they may catch the chain.
- Never cut several limbs at once.
- Do not overreach.
- Never cut above shoulder height.
- Use extreme caution when re-entering a previous cut.
- Do not attempt plunge cuts if you are not experienced in this cutting technique.
- Be alert for shifting of the log or other forces that may cause the cut to close and pinch the chain.
- Always cut with a correctly sharpened, properly tensioned chain – the depth gauge setting must not be too large.
- Use a low kickback chain and a narrow radius guide bar.

### Pull-in (A)



Pull-in occurs when the chain on the bottom of the bar is suddenly pinched, caught or encounters a foreign object in the wood. The reaction of the chain pulls the saw forward – **to reduce this risk, always engage the spiked bumper securely in the tree or limb.**

### Pushback (B)



Pushback occurs when the chain on the top of the bar is suddenly pinched, caught or encounters a foreign object in the wood. The reaction of the chain drives the saw straight back toward the operator – **to avoid this risk:**

- Be alert to situations that may cause the top of the guide bar to be pinched
- Do not twist the guide bar in the cut.

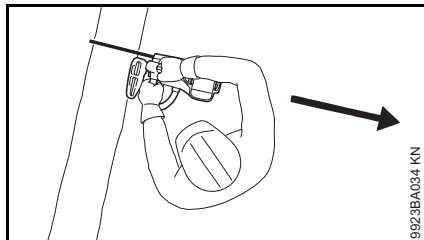
## Working Techniques

### Cutting

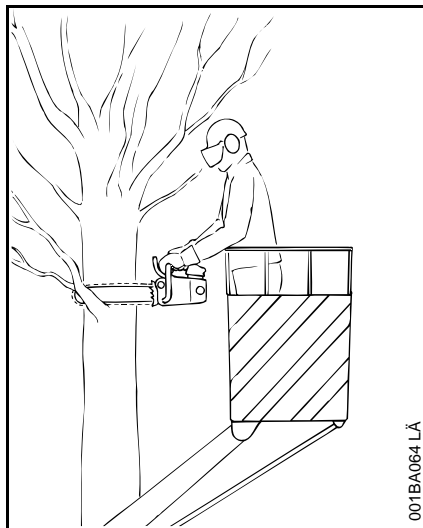
Do not operate your saw in the starting throttle position. Engine speed cannot be controlled with the throttle trigger in this position.

Work calmly and carefully – in daylight conditions and only when visibility is good. Ensure you do not endanger others – stay alert at all times.

Use the shortest possible guide bar: The chain, guide bar and chain sprocket must match each other and your saw.



Position the saw so that your body is **clear of the cutting attachment**.



If conditions allow, work from a **lift bucket**.

Never work on a ladder or on any other insecure support, do not work above shoulder height.

Cordon off the work area in order to reduce the risk of injuries and damage to property from falling branches (e.g. motor vehicles).

When working with a lifeline there is a risk of cutting through the rope – **to reduce the risk of fall injuries**, always use double lifelines.

Take special care when cutting through a limb. Hold the machine firmly to control and counteract the feed force. Note when reaching the end of a cut that the saw is no longer supported in the kerf. You have to take the full weight of the saw – **increased risk of accidents**.

Make sure your saw does not touch any foreign materials: Stones, nails, etc. may be flung off and damage the saw chain. The saw may kick back unexpectedly – **risk of accidents**.

If the rotating chain makes contact with a rock or other solid object there is a risk of sparking which may cause easily combustible material to catch fire under certain circumstances. Dry plants and scrub are also easily combustible, especially in hot and dry weather conditions. If there is a risk of fire, do not use your chainsaw near combustible materials, dry plants or scrub. Always contact your local forest authority for information on a possible fire risk.



**Warning!** To avoid risk of **electrocution**, take extra precautions when cutting near power lines. Have the power switched off before starting cutting work in the immediate vicinity of power lines.

Do not underbuck freely hanging limbs because the chain **may get pinched and cause kickback and loss of control**.

Take care when cutting scrub and young trees. The saw chain may catch and throw thin shoots in your direction.

**To reduce the risk of injury**, take special care when cutting shattered wood because of the risk of injury from splinters being caught and thrown in your direction.

After finishing a cut, activate the chain brake to lock the chain or shut off the engine before moving the saw to another position in the tree.

### Cutting techniques:

Always start the cut with the engine at full throttle.

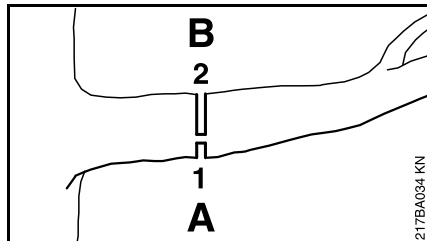
Always pull the saw out of the cut with the chain running.

- Cut straight through thin limbs
- In case of thick limbs, first perform relieving cut from below (approx. 1/5 of diameter), then buck from above
- Support and secure heavy branches with ropes.

If the saw gets pinched in the cut:

- Shut off the engine and secure the saw to the tree – in direction of trunk.
- Carefully free the saw from the cut, using another saw if necessary.

### Limbs under tension:



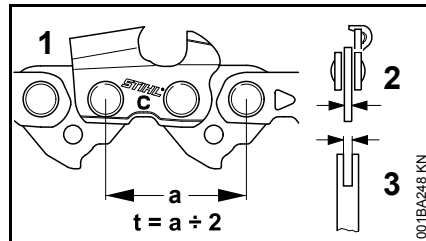
- Always start relieving cut (1) at the compression side (A).
- Make relieving cut (1) and then perform bucking cut (2) at the tension side (B) – the saw will otherwise pinch or kick back.

If not otherwise possible, make the bucking cut from the bottom upwards (underbuck) – **be wary of pushback.**

## Cutting Attachment

A cutting attachment consists of the saw chain, guide bar and chain sprocket.

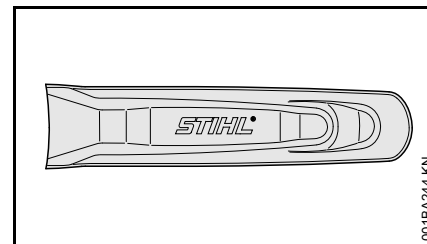
The cutting attachment that comes standard is designed to exactly match the chain saw.



- The pitch (t) of the saw chain (1), chain sprocket and the nose sprocket of the Rollomatic guide bar must match.
- The drive link gauge (2) of the saw chain (1) must match the groove width of the guide bar (3).

If non-matching components are used, the cutting attachment may be damaged beyond repair after a short period of operation.

## Chain Scabbard



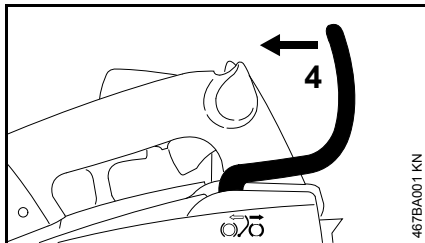
Your saw comes standard with a chain scabbard that matches the cutting attachment.

If guide bars of different lengths are mounted to the saw, always use a chain scabbard of the correct length which covers the complete guide bar.

The length of the matching guide bars is marked on the side of the chain scabbard.

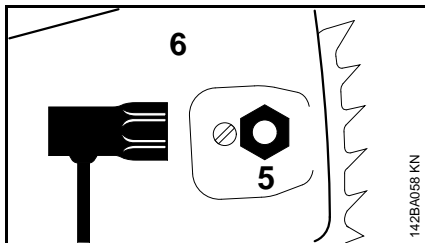
## Mounting the Bar and Chain

### Disengaging the chain brake



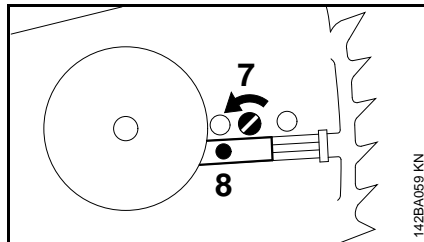
- Pull the hand guard (4) towards the control handle until there is an audible click – the chain is disengaged.

### Removing the chain sprocket cover

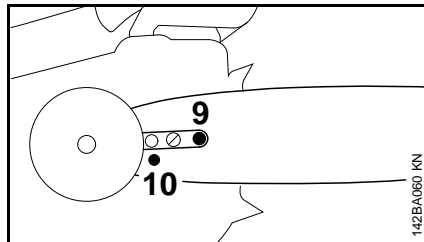


- Unscrew the nut (5) and remove the cover (6).

### Mounting the guide bar



- Turn the screw (7) counterclockwise until the tensioner slide (8) butts against the left end of the housing slot.

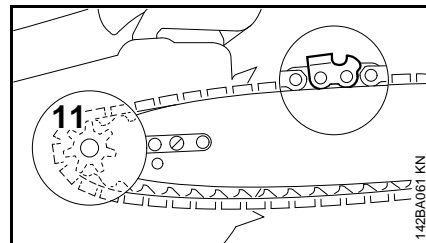


- Fit the guide bar over the stud (9) and engage the peg of the tensioner slide in the hole (10).

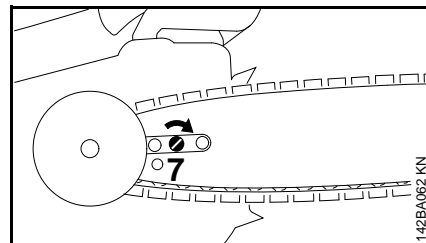
### Fitting the Chain



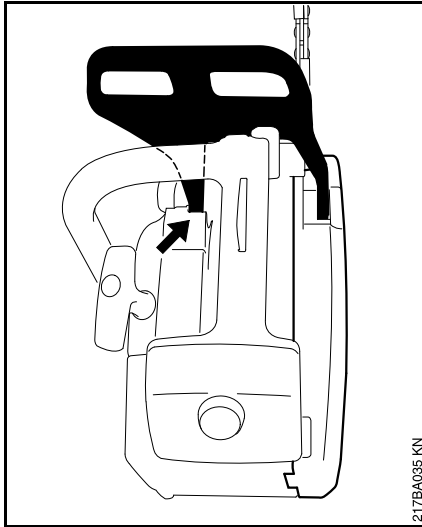
Wear work gloves to protect your hands from the sharp cutters.



- Fit chain around the sprocket (11) and over the guide bar – the cutting edges on top of the bar must point to the bar nose.



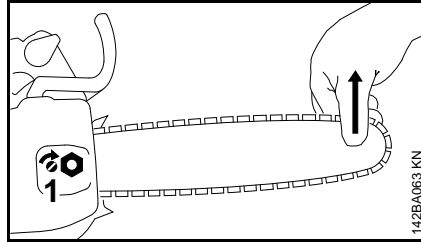
- Turn the screw (7) clockwise until there is very little chain sag on the underside of the bar – and the drive link tangs are engaged in the bar groove.



217BA035 KN

- Refit the chain sprocket cover – the pivot pin on the hand guard must engage the sleeve – and then screw the nut onto the stud finger-tight.
- Go to chapter on "Tensioning the Saw Chain"

## Tensioning the Saw Chain (side chain tensioner)



142BA063 KN

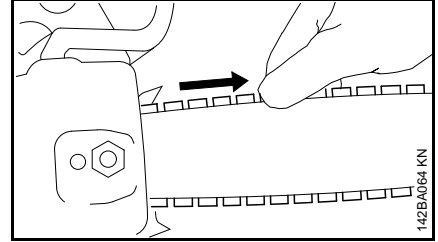
Retensioning during cutting work:

- Switch off the engine.
- Loosen the nut.
- Hold the bar nose up.
- Use a screwdriver to turn the tensioning screw (1) clockwise until the chain fits snugly against the underside of the bar.
- While still holding the bar nose up, tighten down the nut firmly.
- Go to "Checking Chain Tension".

A new chain has to be retensioned more often than one that has been in use for some time.

- Check chain tension frequently – see chapter on "Operating Instructions".

## Checking Chain Tension



142BA064 KN

- Shut off the engine.
- Wear work gloves to protect your hands.
- The chain must fit snugly against the underside of the bar and it must still be possible to pull the chain along the bar by hand when the chain brake is released.
- If necessary, retension the chain.

A new chain has to be retensioned more often than one that has been in use for some time.

- Check chain tension frequently – see chapter on "Operating Instructions".

## Fuel

Your engine requires a mixture of gasoline and engine oil.

### WARNING

For health reasons, avoid direct skin contact with gasoline and avoid inhaling gasoline vapor.

### STIHL MotoMix

STIHL recommends the use of STIHL MotoMix. This ready-to-use fuel mix contains no benzol or lead, has a high octane rating and ensures that you always use the right mix ratio.

STIHL MotoMix uses STIHL HP Ultra two-stroke engine oil for an extra long engine life.

MotoMix is not available in all markets.

### Mixing Fuel

### NOTICE

Unsuitable fuels or lubricants or mix ratios other than those specified may result in serious damage to the engine. Poor quality gasoline or engine oil may damage the engine, sealing rings, hoses and the fuel tank.

### Gasoline

Use only high-quality **brand-name** gasoline with a minimum octane rating of 90 – leaded or unleaded.

Gasoline with an ethanol content of more than 10% can cause running problems in engines with a manually adjustable carburetor and should not be used in such engines.

Engines equipped with M-Tronic deliver full power when run on gasoline with an ethanol content of up to 25% (E25).

### Engine Oil

If you mix the fuel yourself, use only STIHL two-stroke engine oil or another high-performance engine oil in accordance with JASO FB, JASO FC, JASO FD, ISO-L-EGB, ISO-L-EGC or ISO-L-EGD.

STIHL specifies STIHL HP Ultra two-stroke engine oil or an equivalent high-performance engine oil in order to maintain emission limits over the machine's service life.

### Mix Ratio

STIHL 50:1 two-stroke engine oil: 50 parts gasoline to 1 part oil

### Examples

Gasoline Liters	STIHL engine oil 50:1 Liters (ml)
1	0.02 (20)
5	0.10 (100)
10	0.20 (200)
15	0.30 (300)
20	0.40 (400)
25	0.50 (500)

- Use a canister approved for storing fuel. Pour oil into canister first, then add gasoline and mix thoroughly.

### Storing Fuel

Store fuel only in approved safety-type fuel canisters in a dry, cool and safe location protected from light and the sun.

**Fuel mix ages** – only mix sufficient fuel for a few weeks work. Do not store fuel mix for longer than 30 days. Exposure to light, the sun, low or high temperatures can quickly make the fuel mix unusable.

STIHL MotoMix may be stored for up to 2 years without any problems.

- Thoroughly shake the mixture in the canister before fueling your machine.

### WARNING

Pressure may build up in the canister – open it carefully.

- Clean the fuel tank and canister from time to time.

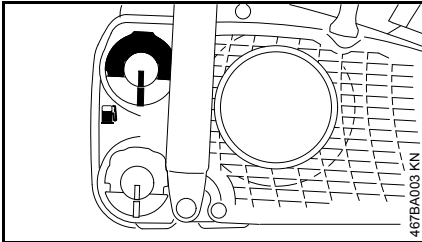
Dispose of remaining fuel and cleaning fluid properly in accordance with local regulations and environmental requirements.



## Fueling

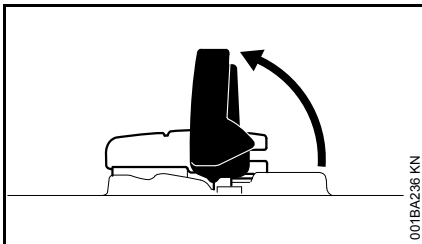


### Preparations

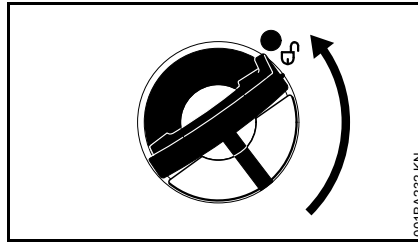


- Before fueling, clean the filler cap and the area around it to ensure that no dirt falls into the tank.
- Position the machine so that the tank cap faces up.

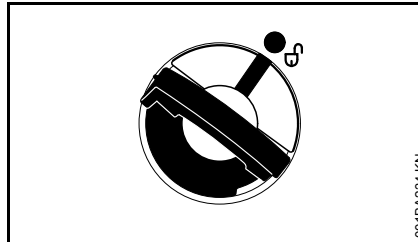
### Opening



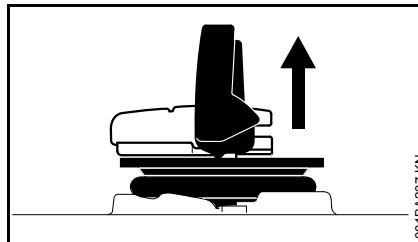
- Raise the grip until it is upright.



- Turn the cap counterclockwise (about a quarter turn).



Marks on tank cap and fuel tank must line up.



- Remove the cap.

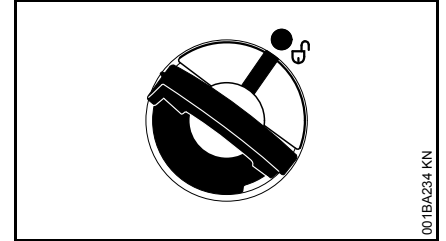
### Filling up with fuel

Take care not to spill fuel while fueling and do not overfill the tank.

STIHL recommends you use the STIHL filler nozzle for fuel (special accessory).

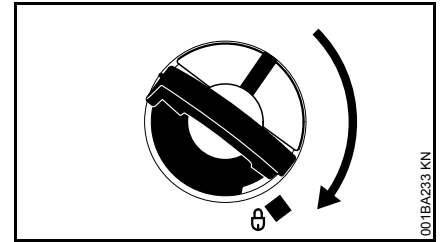
- Fill up with fuel.

### Closing

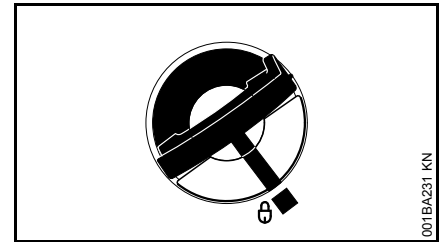


Grip must be vertical:

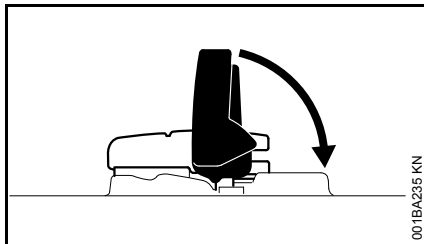
- Fit the cap – marks on tank cap and fuel tank must line up.
- Press the cap down as far as stop.



- While holding the cap depressed, turn it clockwise until it engages in position.

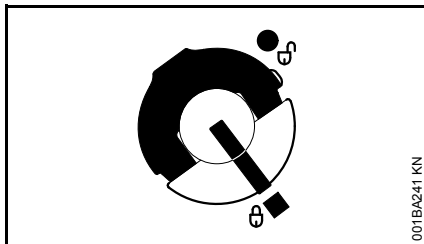


The marks on the tank cap and fuel tank are then in alignment.



001BA235 KN

- Fold the grip down so that it is flush with the top of the cap.



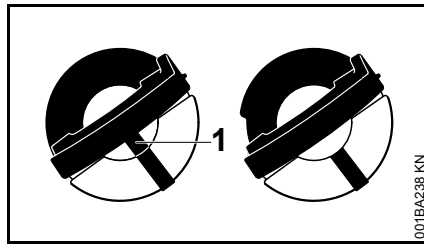
001BA241 KN

Tank cap is locked.

### **If the tank cap cannot be locked in the fuel tank opening**

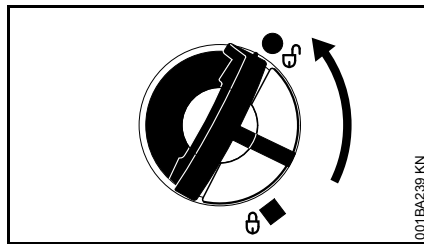
Bottom of cap is twisted in relation to top.

- Remove the cap from the fuel tank and check it from above.



001BA238 KN

Left:	Bottom of cap is twisted – inner mark (1) in line with outer mark.
Right:	Bottom of cap in correct position – inner mark is under the grip. It is not in line with the outer mark.



001BA239 KN

- Place the cap on the opening and rotate it counterclockwise until it engages the filler neck.
- Continue rotating the cap counterclockwise (about a quarter turn) – this causes the bottom of the cap to be turned to the correct position.
- Turn the cap clockwise and lock it in position – see section on "Closing".

## Chain Lubricant

For automatic and reliable lubrication of the chain and guide bar – use only an environmentally compatible quality chain and bar lubricant. Rapidly biodegradable STIHL BioPlus is recommended.



### NOTICE

Biological chain oil must be resistant to aging (e.g. STIHL BioPlus), since it will otherwise quickly turn to resin. This results in hard deposits that are difficult to remove, especially in the area of the chain drive and chain. It may even cause the oil pump to seize.

The service life of the chain and guide bar depends on the quality of the lubricant. It is therefore essential to use only a specially formulated chain lubricant.



### WARNING

**Do not use waste oil.** Renewed contact with waste oil can cause skin cancer. Moreover, waste oil is environmentally harmful.



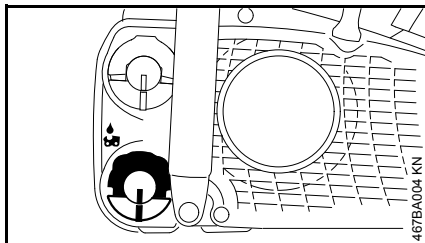
### NOTICE

Waste oil does not have the necessary lubricating properties and is unsuitable for chain lubrication.

## Filling Chain Oil Tank



### Preparations



- Thoroughly clean the oil filler cap and the area around it to ensure that no dirt falls into the tank.
- Position the machine so that the tank cap faces up.
- Open the tank cap.

### Filling the chain oil tank

- Refill the chain oil tank every time you refuel.

Take care not to spill chain oil while refilling and do not overfill the tank.

STIHL recommends you use the STIHL filler nozzle for chain oil (special accessory).

- Close the tank cap.

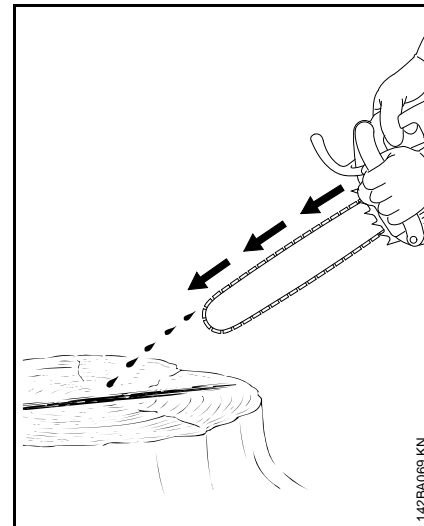


### NOTICE

There must still be a small amount of oil in the oil tank when the fuel tank is empty.

If the oil level in the tank does not go down, the reason may be a problem in the oil supply system: Check chain lubrication, clean the oilways, contact your dealer for assistance if necessary. STIHL recommends that you have servicing and repair work carried out exclusively by an authorized STIHL servicing dealer.

## Checking Chain Lubrication



The saw chain must always throw off a small amount of oil.



### NOTICE

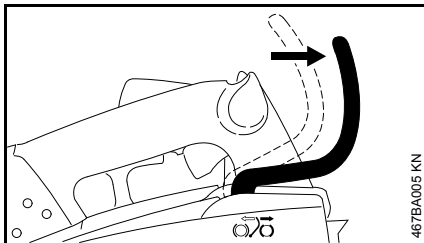
Never operate your saw without chain lubrication. If the chain runs dry, the whole cutting attachment will be irretrievably damaged within a very short time. Always check chain lubrication and the oil level in the tank before starting work.

Every new chain has to be broken in for about 2 to 3 minutes.

After breaking in the chain, check chain tension and adjust if necessary – see "Checking Chain Tension".

## Chain Brake

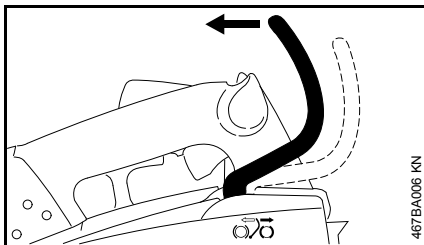
### Locking the Chain



- in an emergency
- when starting
- at idling speed

The chain brake is activated by pushing the hand guard towards the bar nose with your left hand – or by inertia in certain kickback situations:

### Disengaging the Chain Brake



- Pull the hand guard back towards the front handle.

### NOTICE

Always disengage chain brake before accelerating the engine (except when checking its operation) and before starting cutting work.

High revs with the chain brake engaged (chain locked) will quickly damage the powerhead and chain drive (clutch, chain brake).

The chain brake is also activated by the inertia of the front hand guard if the kickback force of the saw is high enough: The hand guard is accelerated toward the bar nose.

The chain brake will operate only if the hand guard has not been modified in any way.

### Checking Operation of the Chain Brake

Before starting work: Run engine at idle speed, engage the chain brake (push hand guard towards bar nose) and open the throttle wide for no more than 3 seconds – the chain must not rotate. The hand guard must be free from dirt and move freely.

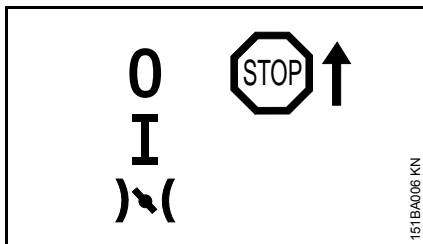
### Chain Brake Maintenance

The chain brake is subject to normal wear. It is necessary to have it serviced and maintained regularly by trained personnel. STIHL recommends that you have servicing and repair work carried out exclusively by an authorized STIHL servicing dealer. Maintain the following servicing intervals:

Full-time usage:	every 3 months
Part-time usage:	every 6 months

## Information Before You Start

### The three positions of the Master Control lever:



**Stop 0** – engine off – the ignition is switched off.

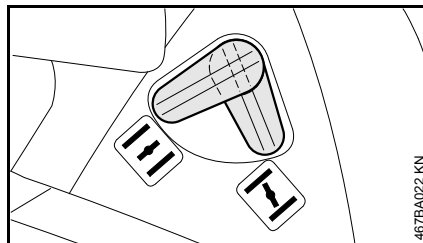
**Normal run position I** – engine runs or can fire.

To move the Master Control lever from I to )\, press down the throttle trigger lockout and squeeze the throttle trigger at the same time.

**Starting throttle position )\** – this position is used to start a warm engine. The Master Control lever moves to the normal run position as soon as the throttle trigger is squeezed.

## Starting / Stopping the Engine

### Positions of Choke Shutter



**Choke shutter closed |)** – for starting the engine

Select this position:

- if the engine is cold
- if the engine stalls when you open the throttle after starting.
- if the fuel tank was run until empty (engine stopped).

**Choke shutter open |+)** – for starting the engine

Select this position:

- if the engine is warm, i.e. if it has been running for about one minute.
- When the engine begins to fire
- after clearing a flooded combustion chamber.

### Setting the Master Control Lever

To move the Master Control lever from the normal run position (I) to starting throttle ()\), press down the throttle trigger lockout and squeeze the throttle

trigger at the same time and hold them in that position – now set the Master Control lever.

The Master Control lever moves from the starting throttle position ()\) to the run position (I) when you press down the throttle trigger lockout and blip the throttle trigger at the same time.

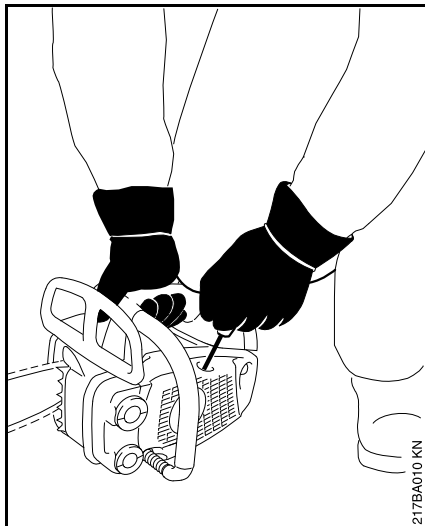
To switch off the engine, move the Master Control lever to Stop (0).

### Manual fuel pump

The manual fuel pump bulb must be pressed:

- When starting for the first time.
- if the fuel tank was run until empty (engine stopped).

## Holding the Saw



- Place your saw on the ground. Make sure you have a firm footing – check that the chain is not touching any object or the ground.
- Hold the saw firmly with your right hand on the top handle.
- Rest your right knee on the carburetor box cover.

## Cranking

- Pull the starter grip slowly with your left hand until you feel it engage – and then give it a brisk strong pull and push down the front handle at the same time. Do not pull out the starter rope to full length – **it might otherwise break.**

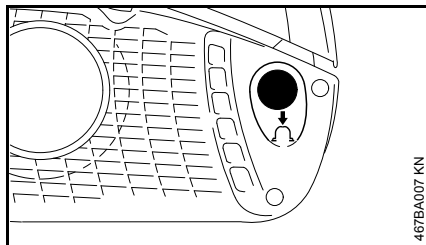
- Do not let the starter grip snap back. Guide it slowly back into the housing so that the starter rope can rewind properly.

## Starting the Saw

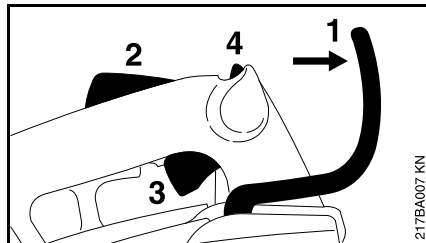


### WARNING

Bystanders must be well clear of the general work area of the saw.

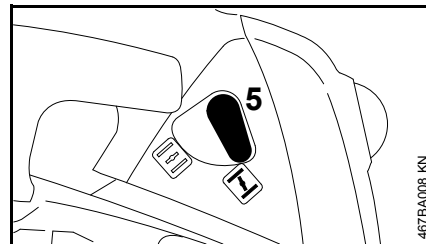


- Press the manual fuel pump bulb at least ten times – even if the bulb is already filled with fuel.



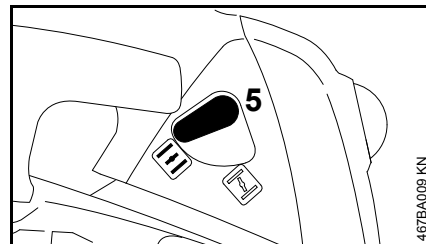
- Push the hand guard (1) forward – the chain is locked.
- Press down the trigger lockout (2) and pull the throttle trigger (3) at the same time. Set Master Control lever (4) to starting throttle position (I↖).
- Set choke lever to required position.

## Choke shutter closed (I↖)



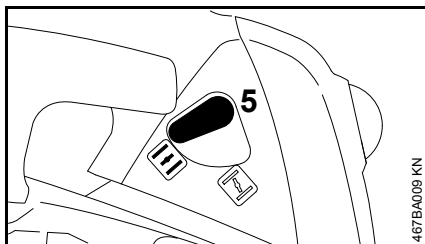
- if the engine is cold (also use this position if the engine stopped when you opened the throttle after starting)

## Choke shutter open (I+)



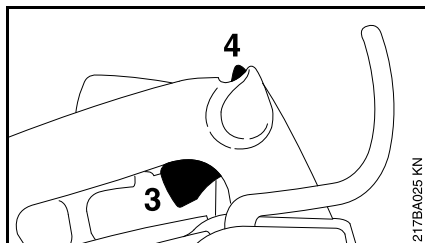
- if the engine is warm, i.e. if it has been running for about one minute.
- Hold and start your saw as described.

### When engine begins to fire

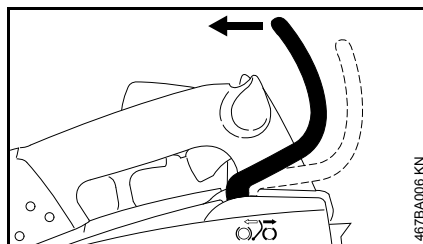


- Move the choke lever to the open position (I+).
- Hold and start your saw as described.

### As soon as the engine runs



- Press down trigger lockout and the blip the throttle trigger (3) – the Master Control lever (4) moves to the run position (I) and the engine settles down to idling speed.



- Pull the hand guard toward the control handle to disengage the chain brake.

### NOTICE

Always disengage chain brake before accelerating the engine. High revs with the chain brake engaged (chain locked) will quickly damage the clutch and chain brake.

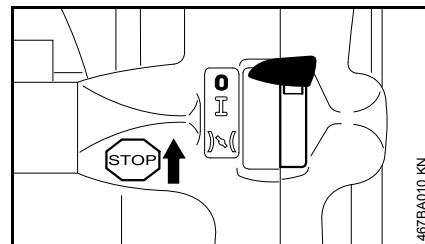
- After a cold start, warm up the engine at varying speeds – your saw is ready for operation.

### At very low outside temperatures

If idling behavior is erratic or acceleration is poor:

- Readjust carburetor if necessary, see "Adjusting the Carburetor".
- If your saw is very cold (frost or ice on machine), start the engine and keep it at a high idle speed (with chain brake disengaged) until it reaches normal operating temperature.

### Stopping the engine



- Move Master Control lever to Stop 0.

### If engine does not start

If you did not move the Master Control lever from the choke closed position (I-) to the choke open position (I+) quickly enough after the engine began to fire, the engine is probably flooded.

- Move Master Control lever to Stop 0.
- Remove the spark plug – see "Spark Plug".
- Dry the spark plug.
- Crank the engine several times with the starter to clear the combustion chamber.
- Refit the spark plug – see "Spark Plug".
- Set Master Control lever to the starting throttle position (I-) – even if the engine is cold.
- Now start the engine.

## **If fuel tank has been run completely dry and then refueled**

- Press manual fuel pump bulb at least ten times.
- Set the Master Control lever to the starting throttle position (I\).
- Move the choke lever to the closed position (I-I).
- Give the starter rope one pull.
- Move the choke lever to the open position (I+I).
- Now start the engine.

## **Operating Instructions**

### **During the break-in period**

A factory new machine should not be run at high revs (full throttle off load) for the first three tank fillings. This avoids unnecessarily high loads during the break-in period. As all moving parts have to bed in during the break-in period, the frictional resistances in the shortblock are greater during this period. The engine develops its maximum power after about 5 to 15 tank fillings.

### **During work**



Do not make the mixture leaner to achieve an apparent increase in power – this could damage the engine – see "Adjusting the Carburetor".



Open the throttle only when the chain brake is off. Running the engine at high revs with the chain brake engaged (chain locked) will quickly damage the shortblock and chain drive (clutch, chain brake).

### **Check chain tension frequently**

A new saw chain must be retensioned more frequently than one that has been in use already for an extended period.

### **Chain cold**

Tension is correct when the chain fits snugly against the underside of the bar but can still be pulled along the bar by hand. Retension if necessary – see "Tensioning the Saw Chain".

### **Chain at operating temperature**

The chain stretches and begins to sag. The drive links must not come out of the bar groove on the underside of the bar – the chain may otherwise jump off the bar. Retension the chain – see "Tensioning the Saw Chain".



The chain contracts as it cools down. If it is not slackened off, it can damage the crankshaft and bearings.

### **After a long period of full-throttle operation**

After a long period of full-throttle operation, allow engine to run for a while at idle speed so that the heat in the engine can be dissipated by flow of cooling air. This protects engine-mounted components (ignition, carburetor) from thermal overload.

### **After finishing work**

- Slacken off the chain if you have retensioned it at operating temperature during work.





Always slacken off the chain again after finishing work. The chain contracts as it cools down. If it is not slackened off, it can damage the crankshaft and bearings.

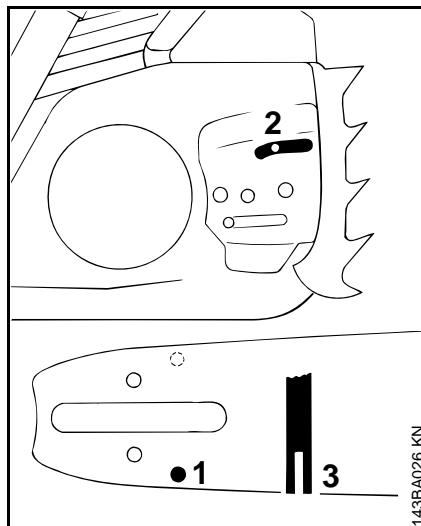
### Short-term storage

Wait for engine to cool down. Keep the machine with a full tank of fuel in a dry place, well away from sources of ignition, until you need it again.

### Long-term storage

See "Storing the machine"

## Taking Care of the Guide Bar



Picco	3/8" P	5.0 mm
Rapid	3/8"; 0.325"	6.0 mm
Rapid	0.404"	7.0 mm

If the groove is not at least this deep:

- Replace guide bar

Otherwise the drive links will grind against the base of the groove – the bottoms of the cutters and the tie straps will not lie against the bar.

- Flip the bar – after each sharpening and each time the chain is changed – to avoid uneven wear, especially at the sprocket nose and on the bottom
- Periodically clean the oil inlet hole (1), oil outlet channel (2) and bar groove (3)
- Measure groove depth – using the measuring tool on the file gauge (special accessory) – in the area with the greatest wear

Chain type	Chain pitch	Minimum groove depth
Picco	1/4" P	4.0 mm
Rapid	1/4"	4.0 mm

## Air Filter System

The air filter system can be adapted to suit different operating conditions by installing different filters. Changing a filter is accomplished quickly and simply.

The saw comes standard with either a fabric filter or a fleece filter.

### Fleece filter

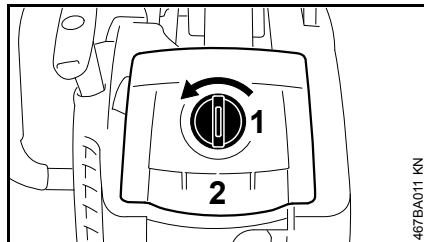
For normal operating conditions and dry work areas.

### Fabric filter

For extremely cold operating conditions (e.g. in powder or drifting snow or frost).

## Cleaning the Air Filter

**If there is a noticeable loss of engine power**



- Open the twist lock (1) in the direction of the arrow.
- Remove the carburetor box cover (2).
- Clean away loose dirt from around the filter.
- Remove the filter.
- Knock out the filter or blow it clear with compressed air from the inside outwards.
- Always replace damaged filters.

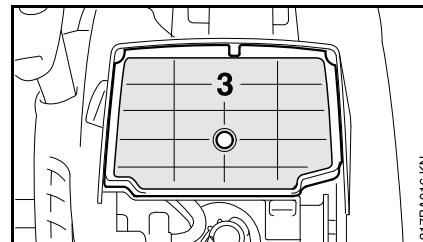
If filter is caked with dirt:

- Wash the filter with STIHL universal cleaner or in a clean, non-flammable solution (e.g. warm soapy water) and then dry.



### NOTICE

Do not use a brush to clean the fleece filter.



- Place the filter (3) in position.
- Fit the carburetor box cover.

## Adjusting the Carburetor

### General Information

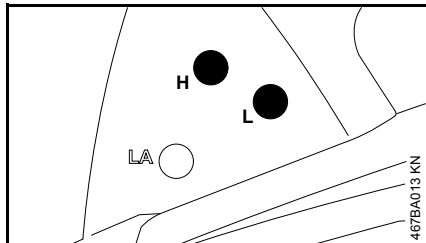
The carburetor comes from the factory with a standard setting.

This setting provides an optimum fuel-air mixture under most operating conditions.

### Preparations

- Shut off the engine.
- Check the air filter and clean or replace if necessary.

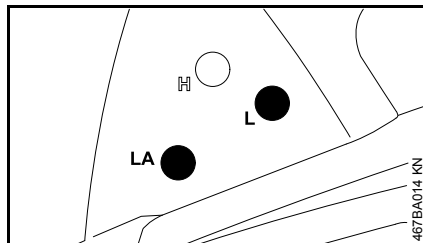
### Standard Setting



- Turn high speed screw (H) counterclockwise as far as stop (no more than 3/4 turn).
- Turn the low speed screw (L) clockwise as far as stop, then turn it back 1/4 turn.

### Adjusting Idle Speed

- Carry out the standard setting.
- Start and warm up the engine.
- Allow engine to idle for about 10 seconds before adjusting the idle speed.



#### Engine stops while idling

- Turn the idle speed screw (LA) clockwise until the chain begins to run – then back it off 1 full turn

#### Saw chain runs while engine is idling

- Turn the idle speed screw (LA) counterclockwise until the chain stops moving – then turn it another full turn in the same direction.

#### WARNING

If the chain continues moving when the engine is idling, have your saw checked and repaired by your servicing dealer.

#### Erratic idling behavior, poor acceleration (even though standard setting of low speed screw is correct)

Idle setting is too lean

- Turn the low speed screw (L) counterclockwise, no further than stop, until the engine runs and accelerates smoothly.

It is usually necessary to change the setting of the idle speed screw (LA) after every correction to the low speed screw (L).

### Fine Tuning for Operation at High Altitude

A slight correction of the setting may be necessary if engine does not run satisfactorily:

- Carry out the standard setting.
- Warm up the engine.
- Turn high speed screw (H) slightly clockwise (leaner) – no further than stop.

#### NOTICE

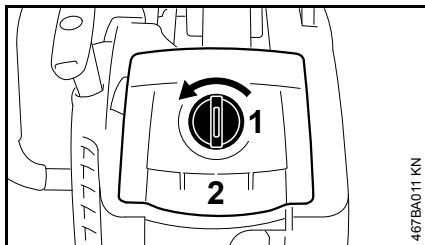
After returning from high altitude, reset the carburetor to the standard setting.

If the setting is too lean there is a risk of engine damage due to insufficient lubrication and overheating.

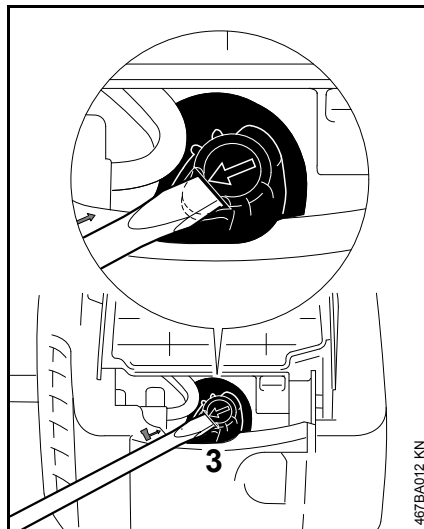
## Spark Plug

- If the engine is down on power, difficult to start or runs poorly at idle speed, first check the spark plug.
- Fit a new spark plug after about 100 operating hours – or sooner if the electrodes are badly eroded. Install only suppressed spark plugs of the type approved by STIHL – see "Specifications".

### Removing the Spark Plug

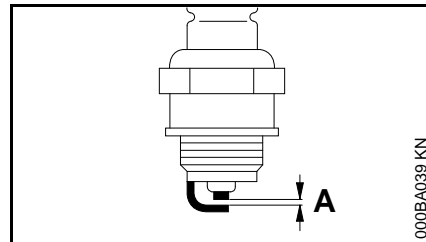


- Open the twist lock (1) in the direction of the arrow.
- Remove the carburetor box cover (2).



- Insert a suitable tool in the spark plug boot (3).
- Pry off the spark plug boot.
- Unscrew the spark plug.

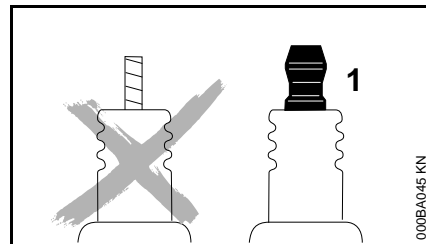
### Checking the Spark Plug



- Clean dirty spark plug.
- Check electrode gap (A) and readjust if necessary – see "Specifications".
- Rectify the problems which have caused fouling of the spark plug.

Possible causes are:

- Too much oil in fuel mix.
- Dirty air filter.
- Unfavorable running conditions.



### WARNING

Arcing may occur if the adapter nut (1) is loose or missing. Working in an easily combustible or explosive atmosphere may cause a fire or an explosion. This can result result in serious injuries or damage to property.

- Use resistor type spark plugs with a properly tightened adapter nut.

### Installing the Spark Plug

- Screw the spark plug into the cylinder.
- Connect the spark plug boot (press it down firmly).
- Fit the carburetor box cover.

## Storing the Machine

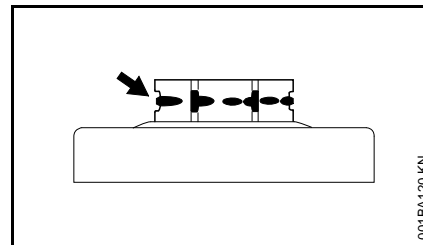
For periods of 3 months or longer

- Drain and clean the fuel tank in a well ventilated area.
- Dispose of fuel properly in accordance with local environmental requirements.
- Run the engine until the carburetor is dry – this helps prevent the carburetor diaphragms sticking together.
- Remove the saw chain and guide bar, clean them and spray with corrosion inhibiting oil.
- Thoroughly clean the machine – pay special attention to the cylinder fins and air filter.
- If you use a biological chain and bar lubricant, e.g. STIHL BioPlus, completely fill the chain oil tank.
- Store the machine in a dry, high or locked location, out of the reach of children and other unauthorized persons.

## Checking and Replacing the Chain Sprocket

- Remove the chain sprocket cover, chain and guide bar.
- Disengage the chain brake: Pull the hand guard towards the front handle.

### Replace the chain sprocket:

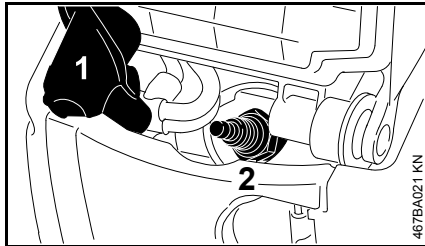


- after using two saw chains or sooner
- if the wear marks (arrows) on the sprocket are deeper than about 0.5 mm (0.02 in) since this would reduce the life of the chain. You can use a gauge (special accessory) to check the depth of the wear marks.

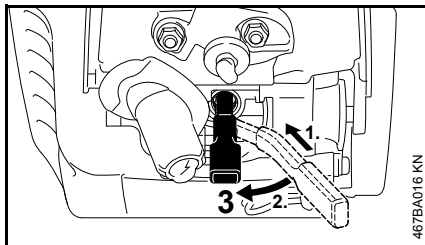
It is best to use two saw chains in rotation with one sprocket.

STIHL recommends the use of original STIHL sprockets to ensure correct operation of the chain brake.

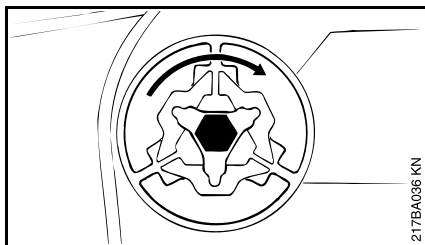
## Removing



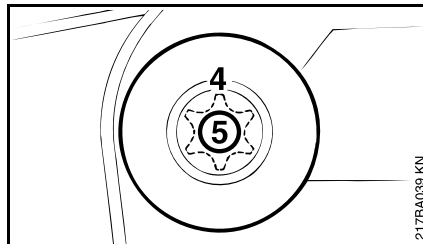
- Remove the spark plug boot (1).
- Unscrew the spark plug (2).



- Insert the locking strip (3) sideways in the cylinder (1) and then turn it through 90° (2).
- Rotate the clutch clockwise as far as stop



- Loosen the clutch hexagon clockwise (left-hand thread).
- Unscrew the clutch.



- Pull the chain sprocket (4) and needle cage (5) off the crankshaft.
- Clean the crankshaft stub and needle cage, and lubricate with STIHL grease (special accessory).

## Assembling

- Push the needle cage and chain sprocket onto the crankshaft.
- Screw the clutch onto the crankshaft (counterclockwise).
- Tighten down the clutch firmly.
- Remove the locking strip from the cylinder. Fit the spark plug and tighten it down firmly.
- Refit boot on the spark plug.

## Maintaining and Sharpening the Saw Chain

### Sawing effortlessly with a properly sharpened saw chain

A properly sharpened saw chain cuts through wood effortlessly even with very little pushing.

Never use a dull or damaged saw chain – this leads to increased physical strain, increased vibration load, unsatisfactory cutting results and increased wear.

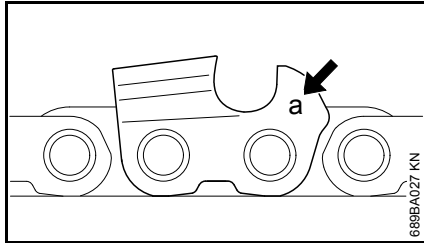
- Clean the saw chain
- Check the saw chain for cracks and damaged rivets
- Replace damaged or worn chain components and adapt these parts to the remaining parts in terms of shape and level of wear – rework accordingly

Carbide-tipped (Duro) saw chains are especially wear-resistant. For an optimal sharpening result, STIHL recommends STIHL servicing dealers.

### WARNING

Compliance with the angles and dimensions listed below is absolutely necessary. An improperly sharpened saw chain – especially depth gauges that are too low – can lead to increased kickback tendency of the chain saw – **risk of injury!**

## Chain pitch



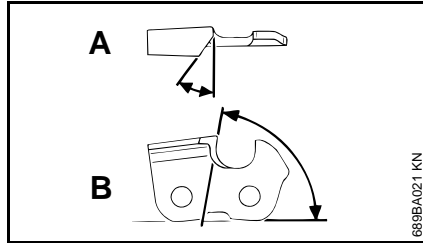
The chain pitch marking (**a**) is embossed in the area of the depth gauge of each cutter.

Marking (a)	Chain pitch	
	Inches	mm
7	1/4 P	6.35
1 or 1/4	1/4	6.35
6, P or PM	3/8 P	9.32
2 or 325	0.325	8.25
3 or 3/8	3/8	9.32
4 or 404	0.404	10.26

The diameter of file to be used depends on the chain pitch – see table "Sharpening tools".

The angles of the cutter must be maintained during resharping.

## Sharpening and side plate angles



### A Sharpening angle

STIHL saw chains are sharpened with a 30° sharpening angle. Ripping chains, which are sharpened with a 10° sharpening angle, are exceptions. Ripping chains have an X in the designation.

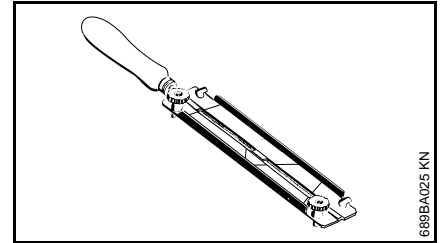
### B Side plate angle

The correct side plate angle results automatically when the specified file holder and file diameter are used.

Tooth shapes	Angle (°)	
	A	B
Micro = semi-chisel tooth, e. g., 63 PM3, 26 RM3, 36 RM	30	75
Super = full chisel tooth, e. g., 63 PS3, 26 RS, 36 RS3	30	60
Ripping chain, e. g., 63 PMX, 36 RMX	10	75

The angles must be identical for all cutters in the saw chain. Varying angles: Rough, uneven running of the saw chain, increased wear – even to the point of saw chain breakage.

## File holder

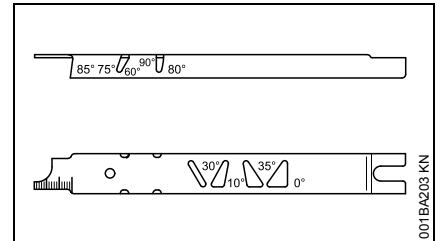


### ● Use a file holder

Always use a file holder (special accessory, see table "Sharpening tools") when sharpening saw chains by hand. File holders have markings for the sharpening angle.

**Use only special saw chain files!** Other files are unsuitable in terms of shape and type of cutting.

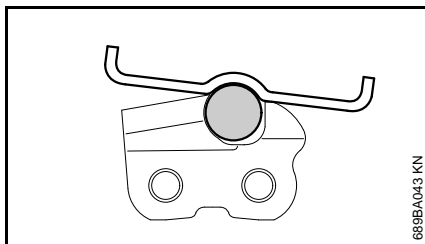
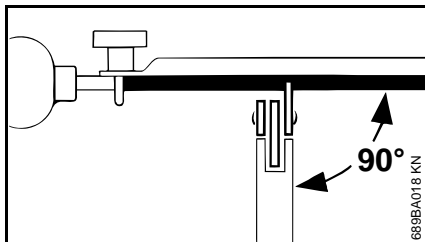
### To check the angles



STIHL filing gauge (special accessory, see table "Sharpening tools") – a universal tool for checking sharpening and side plate angles, depth gauge setting, and tooth length, as well as cleaning grooves and oil inlet holes.

## Proper sharpening

- Select sharpening tools in accordance with chain pitch
- Clamp guide bar if necessary
- Block saw chain – push the hand guard forward
- To advance the saw chain, pull the hand guard toward the handlebar: The chain brake is disengaged. With the Quickstop Super chain brake system, additionally press the throttle trigger lockout
- Sharpen frequently, removing little material – two or three strokes of the file are usually sufficient for simple resharpenering



- Guide the file: **horizontally** (at a right angle to the side surface of the guide bar) in accordance with the specified angle – according to the

markings on the file holder – rest the file holder on the tooth head and the depth gauge

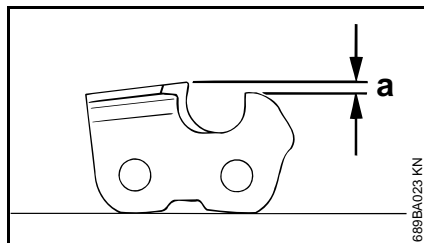
- File only from the inside outward
- The file only sharpens on the forward stroke – lift the file on the backstroke
- Do not file tie straps and drive links
- Rotate the file a little periodically in order to avoid uneven wear
- To remove file burr, use a piece of hardwood
- Check angle with file gauge

All cutters must be equally long.

With varying cutter lengths, the cutter heights also vary and cause rough running of the saw chain and chain breakage.

- All cutters must be filed down equal to the length of the shortest cutter – ideally, one should have this done by a servicing dealer using an electric sharpener

## Depth gauge setting



The depth gauge determines the depth to which the cutter penetrates the wood and thus the chip thickness.

- a Required distance between depth gauge and cutting edge

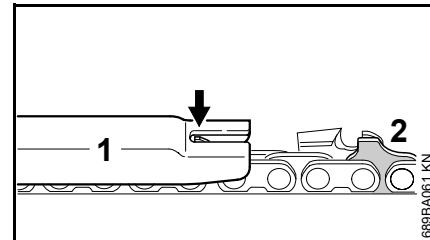
When cutting softwood outside of the frost season, the distance can be increased by up to 0.2 mm (0.008").

Chain pitch		Depth gauge Distance (a)	
Inches	(mm)	mm	(Inches)
1/4 P	(6.35)	0.45	(0.018)
1/4	(6.35)	0.65	(0.026)
3/8 P	(9.32)	0.65	(0.026)
0.325	(8.25)	0.65	(0.026)
3/8	(9.32)	0.65	(0.026)
0.404	(10.26)	0.80	(0.031)

## Lowering the depth gauges

The depth gauge setting is lowered when the cutter is sharpened.

- Check the depth gauge setting after each sharpening



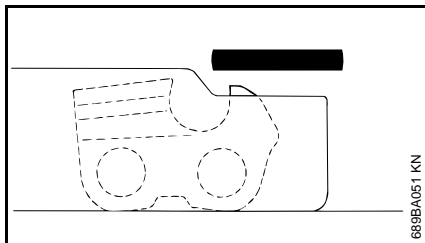
- Lay the appropriate file gauge (1) for the chain pitch on the saw chain and press it against the cutter to be checked – if the depth gauge protrudes past the file gauge, the depth gauge must be reworked



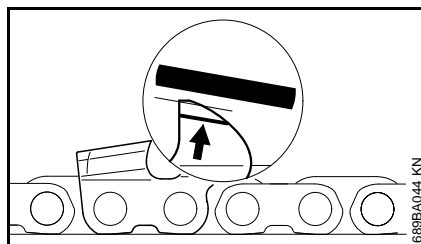
Saw chains with humped drive link (2) – upper part of the humped drive link (2) (with service mark) is lowered at the same time as the depth gauge of the cutter.

**! WARNING**

The rest of the humped drive link must not be filed; otherwise, this could increase the tendency of the chain saw to kick back.



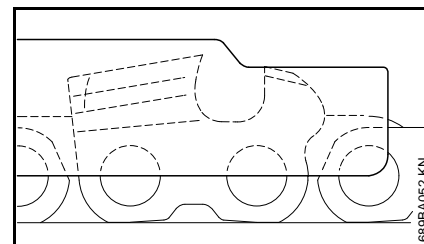
- Rework the depth gauge so that it is flush with the file gauge



- Afterwards, dress the leading edge of the depth gauge parallel to the service mark (see arrow) – when doing this, be careful not to further lower the highest point of the depth gauge

**! WARNING**

Depth gauges that are too low increase the kickback tendency of the chain saw.



- Lay the file gauge on the saw chain – the highest point of the depth gauge must be flush with the file gauge
- After sharpening, clean the saw chain thoroughly, removing any filings or grinding dust – lubricate the saw chain thoroughly
- In the event of extended periods of disuse, store saw chains in cleaned and oiled condition

**Sharpening tools (special accessories)**

Chain pitch	Round file Ø	Round file	File holder	File gauge	Taper square file	Sharpening set <sup>1)</sup>
Inches (mm)	mm (Inches)	Part number	Part number	Part number	Part number	Part number
1/4P (6.35)	3.2 (1/8)	5605 771 3206	5605 750 4300	0000 893 4005	0814 252 3356	5605 007 1000
1/4 (6.35)	4.0 (5/32)	5605 772 4006	5605 750 4327	1110 893 4000	0814 252 3356	5605 007 1027
3/8 P (9.32)	4.0 (5/32)	5605 772 4006	5605 750 4327	1110 893 4000	0814 252 3356	5605 007 1027
0.325 (8.25)	4.8 (3/16)	5605 772 4806	5605 750 4328	1110 893 4000	0814 252 3356	5605 007 1028
3/8 (9.32)	5.2 (13/64)	5605 772 5206	5605 750 4329	1110 893 4000	0814 252 3356	5605 007 1029
0.404 (10.26)	5.5 (7/32)	5605 772 5506	5605 750 4330	1106 893 4000	0814 252 3356	5605 007 1030

<sup>1)</sup> consisting of file holder with round file, taper square file and file gauge

## Maintenance and Care

The following maintenance intervals apply to normal usage and operating conditions. If your daily working time is longer or operating conditions are difficult (very dusty work area, resin-rich wood, tropical wood, etc.), shorten the specified intervals accordingly. If you only use your power tool occasionally, extend the intervals accordingly.		before starting work	after finishing work or daily	after each refueling stop	weekly	monthly	every 12 months	if problem	if damaged	as required
Complete machine	Visual inspection (condition, leaks)	X		X						
	Clean		X							
Throttle trigger, trigger lockout, choke lever, stop switch, Master Control lever (depending on version)	Check operation	X		X						
Chain brake	Check operation	X		X						
	Have checked by servicing dealer <sup>1)</sup>									X
Manual fuel pump (if fitted)	Check	X								
	Have repaired by servicing dealer <sup>1)</sup>								X	
Pickup body/filter in fuel tank	Check					X				
	Clean, replace filter element					X		X		
	Replace						X		X	X
Fuel tank	Clean					X				
Chain oil tank	Clean					X				
Chain lubrication	Check	X								
Chain	Inspect, also check sharpness	X		X						
	Check chain tension	X		X						
	Sharpen									X
Guide bar	Check (wear, damage)	X								
	Clean and turn over									X
	Deburr				X					
	Replace								X	X
Chain sprocket	Check				X					
Air filter	Clean							X		X
	Replace								X	

The following maintenance intervals apply to normal usage and operating conditions. If your daily working time is longer or operating conditions are difficult (very dusty work area, resin-rich wood, tropical wood, etc.), shorten the specified intervals accordingly. If you only use your power tool occasionally, extend the intervals accordingly.		before starting work	after finishing work or daily	after each refueling stop	weekly	monthly	every 12 months	if problem	if damaged	as required
Antivibration elements	Check	X						X		
	Have replaced by servicing dealer <sup>1)</sup>								X	
Air inlet on fan housing	Clean		X		X					X
Cylinder fins	Clean		X			X				X
Carburetor	Check idle adjustment – chain must not rotate	X		X						
	Adjust idle speed; if necessary, have saw serviced or repaired by dealer <sup>1)</sup>									X
Spark plug	Readjust electrode gap							X		
	Replace after every 100 hours of operation									
All accessible screws and nuts (not adjusting screws)	Retighten <sup>2)</sup>									X
Chain catcher	Check	X								
	Replace								X	
Exhaust port	Decoke after first 139 hours of operation, then every 150 hours of operation									X
Safety labels	Replace								X	

<sup>1)</sup> STIHL recommends a STIHL servicing dealer

<sup>2)</sup> Firmly tighten down the cylinder base screws of professional saws (3.4 kW or more) after 10 to 20 hours of operation.

## Minimize Wear and Avoid Damage

Observing the instructions in this manual helps reduce the risk of unnecessary wear and damage to the power tool.

The power tool must be operated, maintained and stored with the due care and attention described in this owner's manual.

The user is responsible for all damage caused by non-observance of the safety precautions, operating and maintenance instructions in this manual. This includes in particular:

- Alterations or modifications to the product not approved by STIHL.
- Using tools or accessories which are neither approved or suitable for the product or are of a poor quality.
- Using the product for purposes for which it was not designed.
- Using the product for sports or competitive events.
- Consequential damage caused by continuing to use the product with defective components.

### Maintenance Work

All the operations described in the "Maintenance Chart" must be performed on a regular basis. If these maintenance operations cannot be performed by the owner, they should be performed by a servicing dealer.

STIHL recommends that you have servicing and repair work carried out exclusively by an authorized STIHL

servicing dealer. STIHL dealers are regularly given the opportunity to attend training courses and are supplied with the necessary technical information.

If these maintenance operations are not carried out as specified, the user assumes responsibility for any damage that may occur. Among other parts, this includes:

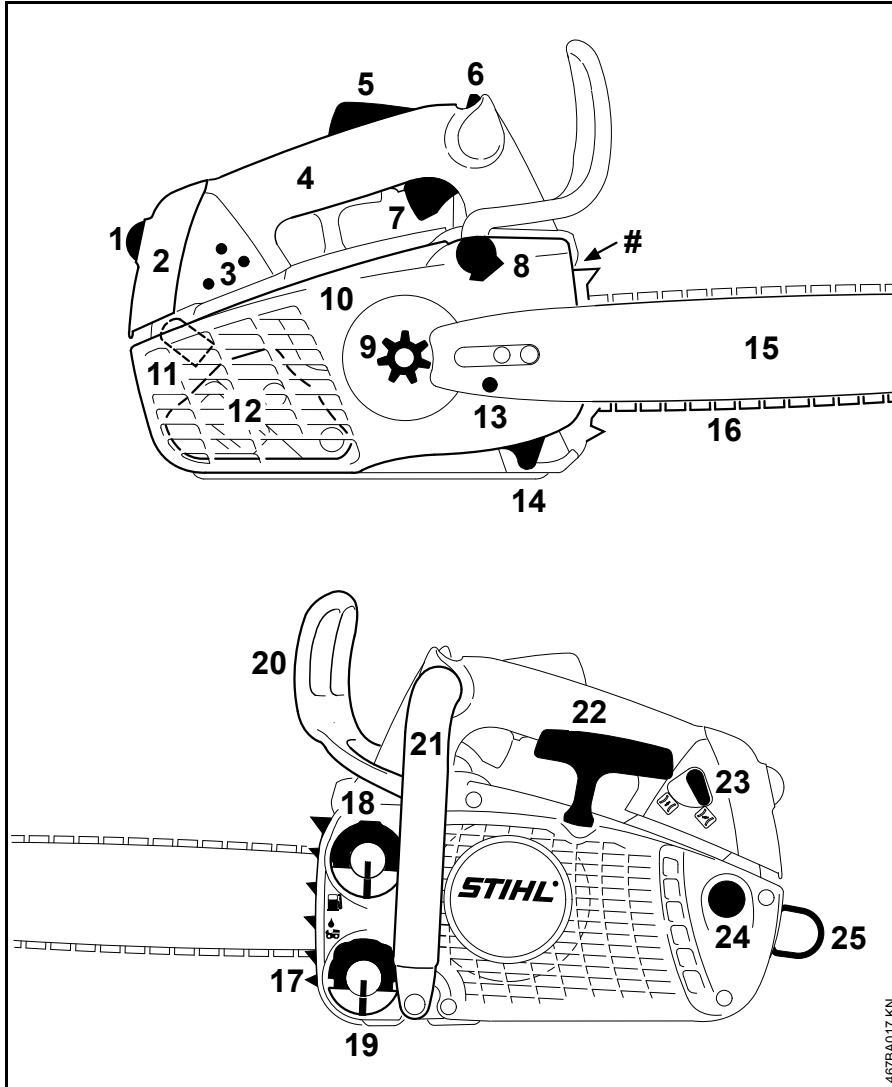
- Damage to the engine due to neglect or deficient maintenance (e.g. air and fuel filters), incorrect carburetor adjustment or inadequate cleaning of cooling air inlets (intake ports, cylinder fins).
- Corrosion and other consequential damage resulting from improper storage.
- Damage to the machine resulting from the use of poor quality replacement parts.

### Parts Subject to Wear and Tear

Some parts of the power tool are subject to normal wear and tear even during regular operation in accordance with instructions and, depending on the type and duration of use, have to be replaced in good time. Among other parts, this includes:

- Saw chain, guide bar
- Drive components (clutch, clutch drum, chain sprocket)
- Filters (air, oil, fuel)
- Starter mechanism
- Spark plug
- Components of antivibration system

## Main Parts



- 1 Carburetor box cover twist lock
- 2 Carburetor box cover
- 3 Carburetor adjusting screws
- 4 Control handle
- 5 Throttle trigger lockout
- 6 Master Control lever
- 7 Throttle trigger
- 8 Chain brake
- 9 Chain sprocket
- 10 Chain sprocket cover
- 11 Spark plug boot
- 12 Muffler
- 13 Chain tensioner
- 14 Chain catcher
- 15 Guide bar
- 16 Oilomatic chain
- 17 Spiked bumper
- 18 Fuel filler cap
- 19 Oil filler cap
- 20 Hand guard
- 21 Handlebar
- 22 Starter grip
- 23 Choke lever
- 24 Manual fuel pump
- 25 Ring for rope
- # Serial number

467BA017\_KN

## Specifications

### Engine

STIHL single cylinder two-stroke engine

#### MS 193 T, MS 193 TC

Displacement:	30.1 cc
Bore:	37 mm
Stroke:	28 mm
Engine power to ISO 7293:	1.3 kW at 10,500 rpm
Idle speed: <sup>1)</sup>	3,000 rpm

<sup>1)</sup> to ISO 11681 +/- 50 rpm

### Ignition System

Electronic magneto ignition

Spark plug (resistor type):	NGK CMR6H
Electrode gap:	0.5 mm

### Fuel System

All position diaphragm carburetor with integral fuel pump

Fuel tank capacity:	270 cc (0.27 l)
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### Chain Lubrication

Fully-automatic speed-controlled oil pump with rotary piston

Oil tank capacity:	220 cc (0.22 l)
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### Weight

dry, without bar and chain

MS 193 T:	3.3 kg
MS 193 TC:	3.4 kg

### Cutting Attachment

Actual cutting length may be less than the specified length

#### Rollomatic guide bars

Bar lengths (3/8" P pitch):	25, 30, 35, 40 cm
Groove width:	1.1 mm

Bar lengths (3/8" P pitch):	30, 35, 40 cm
Groove width:	1.3 mm

Bar lengths (1/4" P pitch):	25, 30, 35 cm
Groove width:	1.1 mm

#### Carving guide bars

Bar lengths (1/4" pitch):	30 cm
Groove width:	1.1, 1.3 mm

#### 3/8" Picco chain

Picco Micro Mini 3 (61 PMM3) Type 3610

Pitch:	3/8" P (9.32 mm)
Drive link gauge:	1.1 mm

Picco Micro 3 (63 PM3) Type 3636

Pitch:	3/8" P (9.32 mm)
Drive link gauge:	1.3 mm

Picco Super 3 (63 PS3) Type 3616

Pitch:	3/8" P (9.32 mm)
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Drive link gauge: 1.3 mm

Picco Duro 3 (63 PD3) Type 3612

Pitch:	3/8" P (9.32 mm)
--------	------------------

Drive link gauge: 1.3 mm

#### 1/4" chains

Rapid Micro Spezial (13 RMS) Type 3661

Pitch:	1/4" (6.36 mm)
Drive link gauge:	1.3 mm

#### 1/4" P chain

Picco Micro 3 (71 PM3) Type 3670

Pitch:	1/4" P (6.36 mm)
--------	------------------

Drive link gauge: 1.1 mm

#### Chain Sprockets

6-tooth for 3/8" P (spur sprocket)

Max. chain speed according to ISO 11681:	25.5 m/s
--	----------

Chain speed at maximum power:	18.6 m/s
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8-tooth for 1/4" (spur sprocket)

Max. chain speed according to ISO 11681:	23.2 m/s
--	----------

Chain speed at maximum power:	16.9 m/s
-------------------------------	----------

## Noise and Vibration Data

For further details on compliance with Vibration Directive 2002/44/EC see [www.stihl.com/vib](http://www.stihl.com/vib).

### Sound pressure level $L_p$ to ISO 22868

100 dB(A)

### Sound power level $L_w$ to ISO 22868

113 dB(A)

### Vibration measurement $a_{hv,eq}$ to ISO 22867

Handle, left 3.1 m/s<sup>2</sup>

Handle, right: 3.1 m/s<sup>2</sup>

The K-factor in accordance with Directive 2006/42/EC is 2.0 dB(A) for the sound pressure level and sound power level; the K-factor in accordance with Directive 2006/42/EC is 2.0 m/s<sup>2</sup> for the vibration level.

## 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 (EC) No. 1907/2006 see [www.stihl.com/reach](http://www.stihl.com/reach).

## Exhaust Emissions

The CO<sub>2</sub> value measured in the EU type approval procedure is specified at [www.stihl.com/co2](http://www.stihl.com/co2).

The measured CO<sub>2</sub> value was determined on a representative engine in accordance with a standardized test procedure under laboratory conditions and does not represent either an explicit or implied guarantee of the performance of a specific engine.

The applicable exhaust emission requirements are fulfilled by the intended usage and maintenance described in this instruction manual. The type approval expires if the engine is modified in any way.

## Ordering Spare Parts

Please enter your saw model, serial number as well as the part numbers of the guide bar and saw chain in the spaces provided. This will make re-ordering simpler.

The guide bar and saw chain are subject to normal wear and tear. When purchasing these parts, always quote the saw model, the part numbers and names of the parts.

Model

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Serial number

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Guide bar part number

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Chain part number

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--


## Maintenance and Repairs

Users of this machine may only carry out the maintenance and service work described in this user manual. All other repairs must be carried out by a servicing dealer.

STIHL recommends that you have servicing and repair work carried out exclusively by an authorized STIHL servicing dealer. STIHL dealers are regularly given the opportunity to attend training courses and are supplied with the necessary technical information.

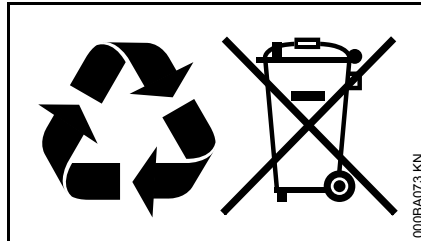
When repairing the machine, only use replacement parts which have been approved by STIHL for this power tool or are technically identical. Only use high-quality replacement parts in order to avoid the risk of accidents and damage to the machine.

STIHL recommends the use of original STIHL replacement parts.

Original STIHL parts can be identified by the STIHL part number, the **STIHL** logo and the STIHL parts symbol  (the symbol may appear alone on small parts).

## Disposal

Observe all country-specific waste disposal rules and regulations.



STIHL products must not be thrown in the garbage can. Take the product, accessories and packaging to an approved disposal site for environment-friendly recycling.

Contact your STIHL servicing dealer for the latest information on waste disposal.

## EC Declaration of Conformity

ANDREAS STIHL AG & Co. KG  
Badstr. 115  
D-71336 Waiblingen

Germany

declare in exclusive responsibility that the product

Category:	Chain saw
Make:	STIHL
Model:	MS 193 T MS 193 TC

Serial identification:	1137
Displacement:	30.1 cc

conforms to the relevant provisions of Directives 2006/42/EC, 2014/30/EU and 2000/14/EC and has been developed and manufactured in compliance with the following standards in the versions valid on the date of production:

EN ISO 11681-1, EN 61000-6-1,  
EN 55012

The measured and guaranteed sound power levels were determined according to Directive 2000/14/EC, Annex V, using the ISO 9207 standard.

### Measured sound power level

113 dB(A)

### Guaranteed sound power level

115 dB(A)

The EC type examination was carried out by



DPLF  
Deutsche Prüf- und Zertifizierungsstelle  
für Land- und Forsttechnik (NB 0363)  
Spremlberger Straße 1  
D-64823 Groß-Umstadt

Certification No.  
K-EG-2014/6885

Technical documents deposited at:

ANDREAS STIHL AG & Co. KG  
Produktzulassung (Product Licensing)

The year of manufacture and serial  
number are applied to the product.

Done at Waiblingen, 28.10.2016

ANDREAS STIHL AG & Co. KG



Thomas Elsner  
Director Product Management and  
Services







0458-559-0121-A

englisch



[www.stihl.com](http://www.stihl.com)



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