STIHL®

STIHL MS 381

Instruction Manual

Contents

Dear Customer,

Thank you for choosing a quality engineered STIHL product.

This machine has been built using modern production techniques and comprehensive quality assurance. Every effort has been made to ensure your satisfaction and troublefree use of the machine.

Please contact your dealer or our sales company if you have any queries concerning your machine.

Hans Peter Stihl

CE

STIHL®

Guide to Using this Manual

Pictograms

All the pictograms attached to the machine are shown and explained in this manual.

The operating and handling instructions are supported by illustrations.

Symbols in text

The individual steps or procedures described in the manual may be marked in different ways:

- A bullet marks a step or procedure without direct reference to an illustration.

A description of a step or procedure that refers directly to an illustration may contain item numbers that appear in the illustration.
Example:

Loosen the screw (**1**)

Lever (**2**) ...

In addition to the operating instructions, this manual may contain paragraphs that require your special attention. Such paragraphs are marked with the symbols described below:

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

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

Note or hint which is not essential for using the machine, but may improve the operator's understanding of the situation and result in better use of the machine.

Note or hint on correct procedure in order to avoid damage to the environment.

* Equipment and features

This instruction manual may refer to several models with different features. Components that are not installed on all models and related applications are marked with an asterisk (*). Such components may be available as special accessories from your STIHL dealer.

Engineering improvements

STIHL's philosophy is to continually improve all of its products. As a result, engineering changes and improvements are made from time to time. If the operating characteristics or the appearance of your machine differ from those described in this manual, please contact your STIHL dealer for assistance.

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

Safety Precautions and Working Techniques

Because a chainsaw is a high-speed wood-cutting tool with sharp cutters, some special safety precautions must be observed in addition to those that generally apply when working with an axe or hand saw.

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

Always observe local safety regulations, standards and ordinances.

If you have never used this chainsaw model before:
Have your STIHL dealer show you how to operate your chainsaw or attend a special course of training in chainsaw operation.

Minors should never be allowed to use a chainsaw. Children, bystanders and animals should not be allowed in the area where a chainsaw is in use.

When the machine is not in use (work break), shut it off so that it does not endanger others and secure it against unauthorized use.

The chainsaw user is responsible for accidents or risks involving third parties or their property.

Do not lend or rent your chainsaw without the instruction manual. Be sure that anyone using your saw understands the information contained in this manual.

You must be rested, healthy and in good physical condition to operate a power tool.

Persons with pacemakers only:
The ignition system of your unit produces an electromagnetic field of a very low intensity. This field may interfere with some pacemakers. To reduce the risk of serious or fatal injury, persons with pacemaker should consult their physician and the pacemaker manufacturer before operating this tool.

Do not operate this power tool while 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).

Use your saw for cutting wood or wooden objects only.

Do not use your chainsaw for any other purpose since this may result in accidents or damage to the machine. Never attempt to modify your chainsaw in any way since this can be extremely dangerous and may also result in accidents or damage to the machine.

Only use tools, guide bars, chains, chain sprockets and accessories that are explicitly approved for this chainsaw model by STIHL or are technically identical. If you have any questions in this respect, consult a specialist dealer. Use only high quality replacement parts since there is otherwise a risk of accidents or damage to the machine.

STIHL recommends the use of STIHL original tools, guide bars, chains, chain sprockets and accessories. The characteristics of these components are specifically designed to match your chainsaw model and meet your performance requirements.

Clothing and Equipment

Wear proper protective clothing and equipment.

Clothing must be sturdy but allow complete freedom of movement. Wear snug-fitting clothing with **cut retardant inserts** – a safety combination, not a coat.

Do not wear loose-fitting garments, scarves, jewelery or anything that could restrict movement or become entangled with the saw, wood or brush. Tie up and confine long hair (e.g. with a hair net, cap, hard hat, etc.).

Wear steel-toed **safety boots** with non-slip soles.

Wear a **safety hard hat** where there is a danger of head injuries from falling objects.

Wear **safety glasses** or a **face shield** and hearing protection, e.g. ear plugs or ear muffs.

Wear **heavy-duty gloves,** preferably made of leather.

STIHL offers a comprehensive range of safety clothing and equipment.

Transporting the Chainsaw

Always engage the chain brake and fit the chain guard (scabbard) before carrying the saw short distances. Also stop the engine before carrying the saw longer distances (more than about 50 m).

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

Transporting by vehicle: When transporting in a vehicle, properly secure your saw to prevent turnover, fuel spillage and damage.

Fueling

Gasoline is an extremely flammable fuel. Keep clear of naked flames and fire. Do not spill any fuel – do not smoke.

Stop the engine before refueling.

Do not refuel while the engine is still hot since fuel may overflow and catch fire.

Open the fuel cap carefully to allow any pressure build-up in the tank to release slowly.

Fuel your chainsaw in a well-ventilated area, outdoors only. If you spill fuel, wipe the saw immediately – if fuel gets on your clothing, change immediately.

Different models may be equipped with different fuel caps.

After fueling, tighten down the screw-type fuel cap as securely as possible.

Insert the fuel cap with hinged grip (bayonet type cap) correctly in the opening, turn it clockwise as far as stop and fold the grip down.

This reduces the risk of unit vibrations causing the fuel cap to loosen or come off and spill quantities of fuel.

Before Starting

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

- Check operation of chain brake, front hand guard
- Correctly mounted guide bar
- Correctly tensioned chain
- Smooth action of throttle trigger and throttle trigger interlock – throttle trigger must return automatically to idle position
- Master control/stop switch must move easily to **STOP** or **0**
- Check that 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
- Keep the handles dry and clean – free from oil and pitch – for safe control.

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

Starting the Engine

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

Your chainsaw is a one-person saw. Do not allow other persons near the running chainsaw. Start and operate your saw without assistance.

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

Do not drop start the chainsaw.
The correct starting procedure is described in your instruction manual.

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

During Operation

In the event of impending danger or in an emergency, switch off the engine immediately by moving the Master Control / stop switch to ▮ or STOP.

Never allow the chainsaw to run unattended.

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.

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

Avoid stumbling on stumps, roots, rocks or in ditches.

Ensure you always have a firm and safe footing.

Do not work alone – keep within calling distance of others in case help is needed.

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.

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.

Your chainsaw produces toxic exhaust fumes as soon as the engine is running. These fumes may be colorless and odorless and contain unburnt hydrocarbons and benzol. Never run the engine indoors or in poorly ventilated locations, even if your model is equipped with a catalytic converter.

To reduce the risk of serious or fatal injury from breathing toxic fumes, ensure proper ventilation when working in trenches, hollows or other confined locations.

To reduce the risk of accidents, stop work immediately in the event of nausea, headache, visual disturbances (e.g. reduced field of vision), problems with hearing, dizziness, deterioration in ability to concentrate. Apart from other possibilities, these symptoms may be caused by an excessively high concentration of exhaust gases in the work area.

The mists, vapors and dusts (e.g. sawdust) produced during cutting may be dangerous to health. If the work area is very dusty, wear a respirator that offers suitable protection.

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

If your chainsaw 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 cutting work – see also “Before Starting”.

Check the fuel system 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 saw checked by your servicing dealer.

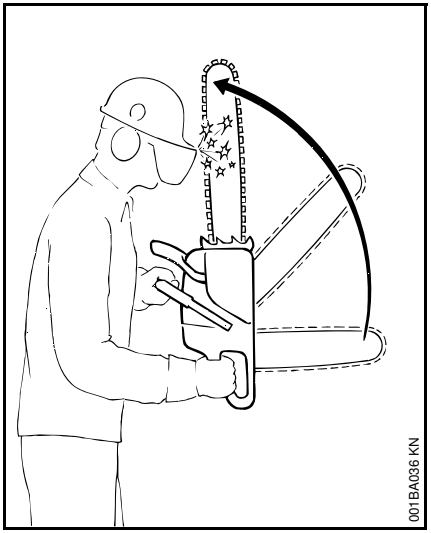
Make sure the chain does not rotate while the engine is idling. If necessary, adjust idle speed properly. If the chain still rotates, have the saw checked by your servicing dealer.

Reactive Forces

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

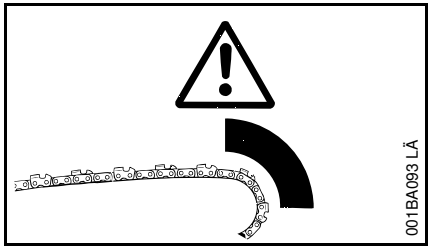
Dangers of kickback

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.

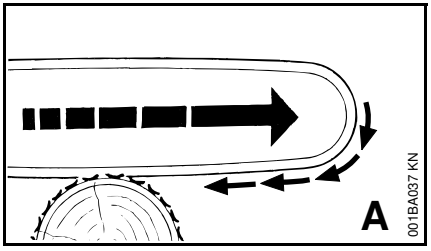
Quickstop chain brake:

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:

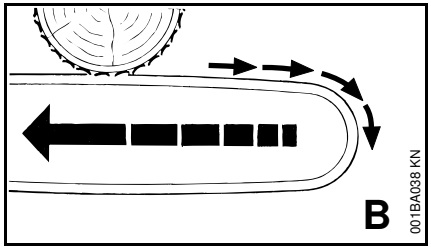
- Work cautiously and avoid situations which could cause kickback.
- Hold the chainsaw firmly with both hands and maintain a secure grip.
- Always cut at full throttle.
- Be aware of the location of the guide bar nose at all times.
- Do not cut with the bar nose.
- Take special care with small, tough 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 experience 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.

A = Pull-in



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.
Always hold the spiked bumper securely against the tree or limb.

B = Pushback



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 pushback:

– 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.

Exercise extreme caution:

– with leaners
– with trees that have fallen unfavorably between other trees and are under strain
– when working in blowdown areas.

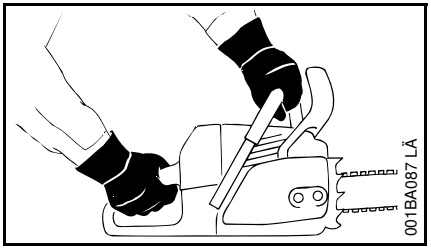
Do not work with the chainsaw in such circumstances. Use block and tackle, cable winch or tractor.

Pull out exposed and cleared logs. Select clear area for cutting.

Deadwood (dry, decayed or rotted wood) represents a considerable risk that is difficult to assess. Identifying the extent of the dangers is complicated, if not impossible. Use aids such as a cable winch or tractor in such cases.

When felling in the vicinity of roads, railways, power lines, etc., take extra precautions. If necessary, inform the police, utility company or railway authority

Holding and Controlling the Saw



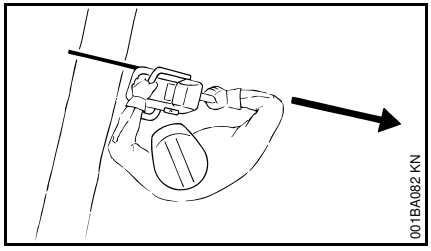
Always **hold your saw firmly with both hands** – right hand on the rear handle, even if you are left-handed. To ensure safe control, wrap your fingers tightly around the front handle and control handle.

Cutting

Do not operate your chainsaw with the starting throttle lock engaged. 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.

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

Use your chainsaw for cutting only. It is not designed for prying or shoveling away limbs, roots or other objects.

Do not underbuck freely hanging limbs.

To reduce the risk of injury, take special care when cutting shattered wood – sharp slivers of wood may be caught and flung in your direction.

Make sure your saw does not touch any foreign materials:
Stones, nails, etc. may be flung off, damage the saw chain or cause the saw to kick back unexpectedly.

If on a slope, stand on the uphill side of the log. Watch out for rolling logs.

When working at heights:

- Always use a lift bucket
- Never work on a ladder
- Never work in a tree
- Never work on any other insecure support
- Do not work above shoulder height
- Never operate the saw with one hand

Begin cutting with the saw at full throttle and engage the spiked bumper firmly in the wood, and then continue cutting.

Never work without the spiked bumper because the saw may pull you forwards and off balance. **Always hold the spiked bumper securely against the tree or limb.**

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 since it might otherwise go out of control.

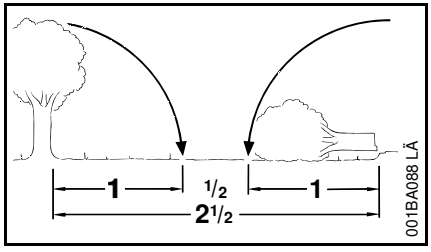
Felling and Limbing

To reduce the risk of accidents and injury, do not attempt felling or limbing unless you have been trained in the necessary techniques.

Observe all country-specific regulations on felling techniques.

Check that there are no other persons in the felling area – other than helpers.

Make sure no-one is endangered by falling tree – the noise of your engine may drown any warning calls.



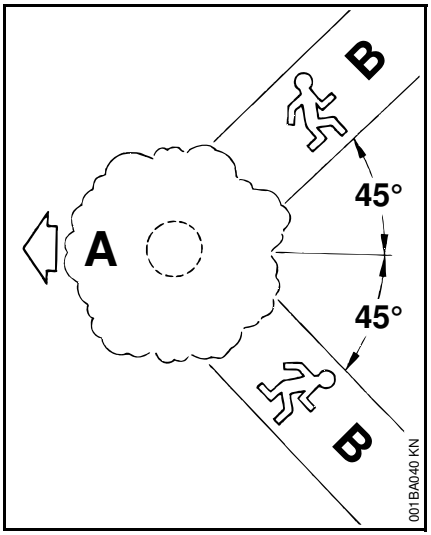
Maintain a distance of at least $2^1/_2$ tree lengths from next felling site.

Determine direction of fall and escape paths

Select gap in stand into which you want the tree to fall.

Pay special attention to the following points:

– The natural lean of the tree
– Any unusually heavy limb structure, damage
– The wind direction and speed – do not fell in high winds
– Sloping ground
– Neighboring trees
– Snow load
– Soundness of tree – take special care if trunk is damaged or in case of deadwood (dry, decayed or rotted wood)



A = Direction of fall

B = Escape paths

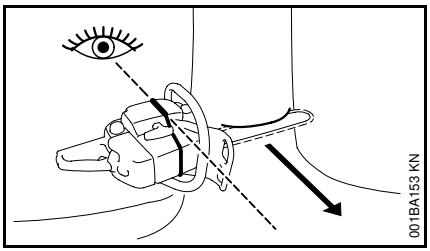
– Establish paths of escape for everyone concerned – opposite to direction of fall at about 45°.
– Remove all obstacles from escape paths.
– Place all tools and equipment a safe distance away from the tree, but not on the escape paths.
– Always keep to the side of the falling tree and only walk away along the preplanned escape path.
– On steep slopes, plan escape routes parallel to the slope.
– When walking away along the escape path, watch out for falling limbs and watch the top of the tree.

Preparing work area at base of tree

– First clear the tree base and work area from interfering limbs and brush to provide a secure footing.
– Clean lower portion of tree base with an axe. Sand, stones and other foreign objects will dull the saw chain.

– Remove large buttress roots: Make vertical cut first, then horizontal – but only if wood is sound.

Felling notch

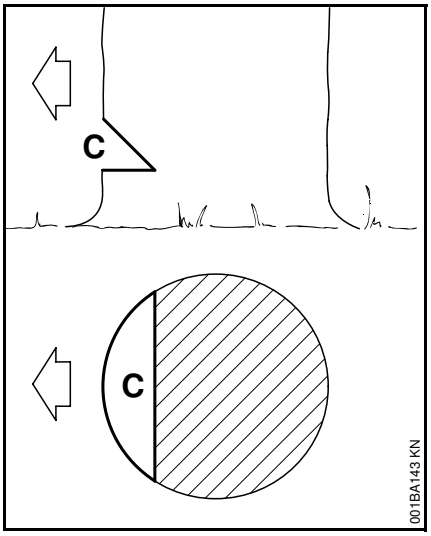


When making the felling notch, make use of the gunning sight on the shroud and housing to check the planned direction of fall.

Position your saw so that the gunning sight points in exactly in the direction you want the tree to fall.

There are several approved methods for making the felling notch – observe country-specific regulations on felling techniques.

STIHL recommends the following method:

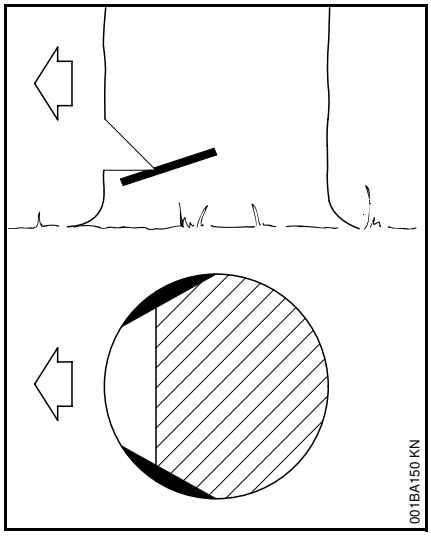


The felling notch **(C)** determines the direction of fall.

- Make the horizontal cut – check the direction of fall with the gunning sight.
- Make angle cut at about 45°.
- Check the felling notch and correct it if necessary.

Important:

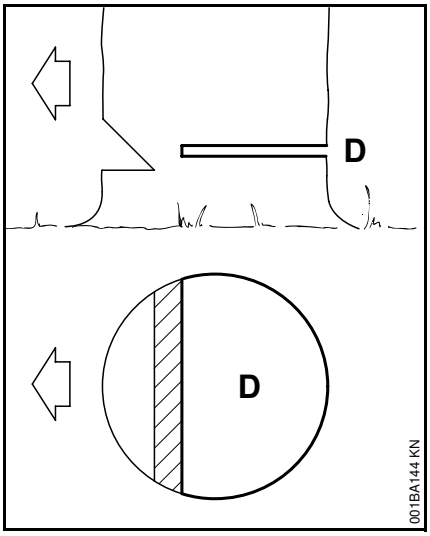
– Felling notch at a right angle to the planned direction of fall.
– As close to ground as possible.
– Cut to a depth of about $^1/_5$ to $^1/_3$ of the trunk diameter.



Sapwood cuts

Sapwood cuts in long-fibered softwood help prevent sapwood splintering when the tree falls. Make cuts at both sides of the trunk at same height as bottom of felling notch to a depth of about $^1/_{10}$ of trunk diameter. On large diameter trees, cut to no more than width of guide bar.

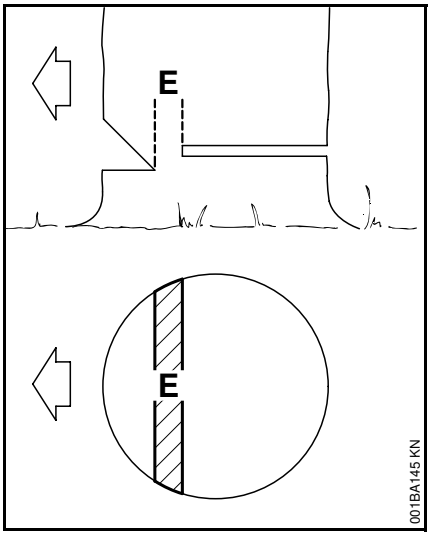
Do not make sapwood cuts if wood is diseased.

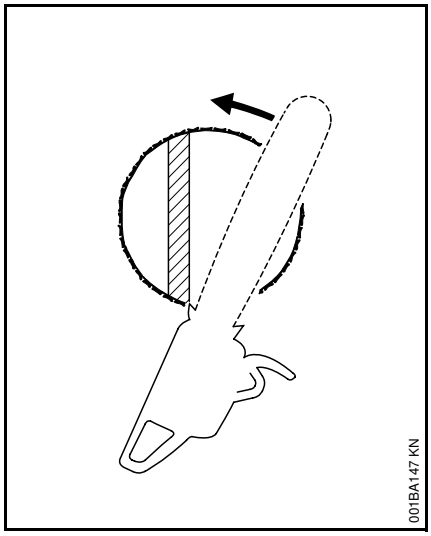


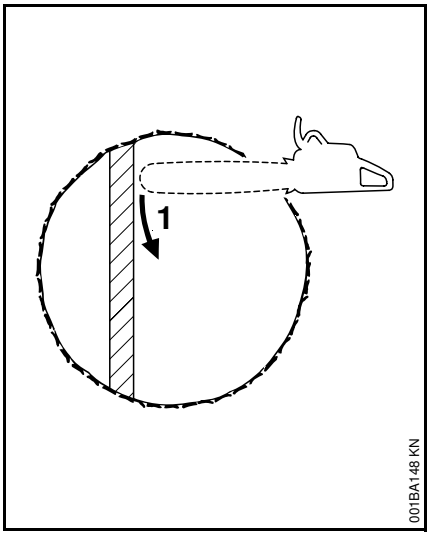
Felling

Shout a warning before starting the felling cut.

– Make the felling cut (**D**) slightly higher than bottom of felling notch.
– Cut horizontally.
– Leave approx. $^1/_{10}$ of tree diameter uncut between felling cut and felling notch. This is the hinge.







– Drive wedges into the felling cut in good time. Use only wooden, aluminum or plastic wedges. Never steel, which can damage the chain and cause kickback.
– The hinge **(E)** helps control the falling tree.
– Do not cut through the hinge **–** you could lose control of the direction of fall **–** this could result in an accident.
– Leave a broader hinge on rotten trees.

Shout a second warning immediately before the tree falls.

Small diameter trees: simple fan cut

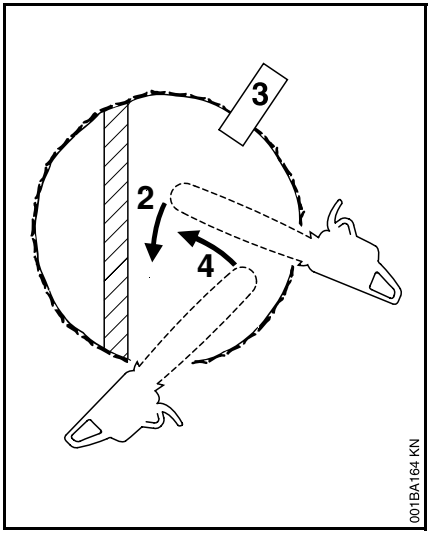
Apply the spiked bumper behind the hinge – pivot the saw around this point - only as far as the hinge. The spiked bumper rolls against the trunk.

Large diameter trees: sectioning method

If the diameter of the tree is greater than the length of the guide bar, use the sectioning method.

Use the spiked bumper as a pivot – avoid repositioning the saw more than necessary.

First cut (1):
Nose of guide bar should enter wood just behind the hinge – hold the saw horizontally and swing it as far as possible.



When repositioning for the **next cut (2),** keep the guide bar fully engaged in the kerf to keep the felling cut straight – apply the spiked bumper again.

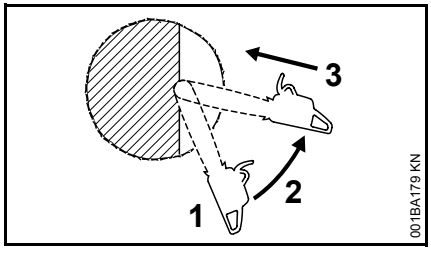
Insert a wedge **(3)** in the cut.

Last cut (4):
Apply the spiked bumper as for the simple fan cut – do not cut through the hinge!

Plunge cutting

Do not attempt plunge cuts if you are not experience in this cutting technique.

– Use a low kickback chain and exercise particular caution
– For heartwood cut
– For felling leaners
– For relieving cuts during bucking
– For DIY projects



Begin cut **(1)** by applying lower portion of the guide bar nose – do not use upper portion because of risk of kickback. Cut until depth of kerf is twice the width of the guide bar.

Swing saw slowly **(2)** into plunge-cutting position. Take care because of the risk of kickback or pushback.

Make the plunge cut **(3)** very carefully. Danger of pushback.

Heartwood cut

Enlarge the plunge cut to both sides as shown

– if tree diameter is more than twice the length of the guide bar.
– if a large portion of heartwood remains uncut on large diameter trees.
– on trees that are difficult to fell (oak, beech), to prevent heartwood splintering and maintain planned direction of fall.
– on soft deciduous trees to relieve tension in lying log and prevent slivers in the center of the hinge being torn out of the log.
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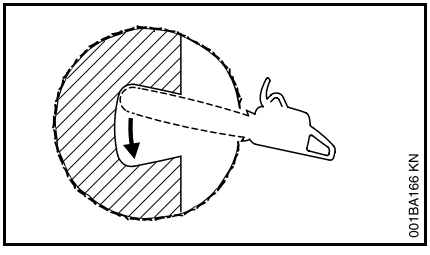


- Carefully make the plunge cut in the center of the felling notch – **there is a danger of pushback at this point** – then swing the bar in the direction of the arrow.

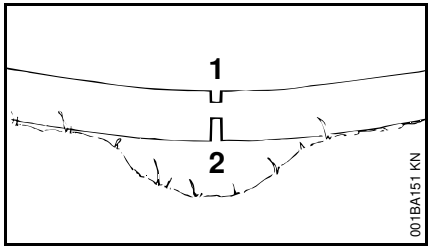
Limbing

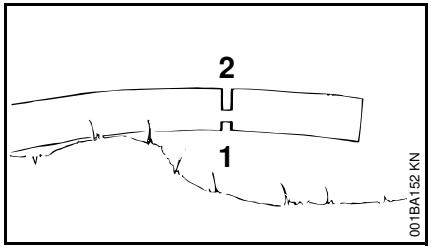
- Use a low kickback chain.
- Work with the saw supported wherever possible.
- Do not work with the bar nose.
- Watch for limbs which are under tension.
- Never attempt to cut several limbs at once.

When cutting small logs

- Use a sturdy and stable support – sawhorse.
- Never hold the log with your leg or foot.
- Never allow another person to hold the log or help in any other way.

Lying or standing logs under tension: Risk of pinching!





Always start relieving cut at the compression side **(1)**.

Make relieving cut and then perform bucking cut at the tension side **(2)** – 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.

Do not cut a lying log at a point where it is touching the ground because the saw chain will otherwise be damaged.

Vibrations

Prolonged use of the unit 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)
- breaks

The period of usage is shortened by:

- Any personal tendency to suffer from poor circulation (symptoms: frequently cold fingers, itching).
- Low outside temperatures.
- Gripping force (a tight grip hinders circulation).

Continual and regular users should monitor closely the condition of their hands and fingers. If any of the above symptoms appear, seek medical advice.

Maintenance and Repairs

Service the machine regularly. Do not attempt any maintenance or repair work not described in the instruction manual. Have all other work performed by a specialist 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 receive technical information bulletins on engineering changes.

Use only high quality replacement parts since there is otherwise a risk of accidents or damage to the machine. If you have any questions in this respect, consult a specialist dealer.

STIHL recommends you use only original STIHL replacement parts. The characteristics of these parts are specifically designed to match your chainsaw model and meet your performance requirements.

To reduce **the risk of injury** from unintentional engine startup and chain rotation, **always shut off the engine and disconnect the spark plug boot** before performing any repairs, maintenance or cleaning work. – Exception: Carburetor and idle speed adjustments.

To reduce the **risk of fire**, do not service or store your machine near open flames.

Check the fuel filler cap for leaks at regular intervals.

Use only a spark plug of the type approved by STIHL and make sure it is in good condition – see "Specifications".

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

Do not turn the engine over on the starter with the spark plug boot or spark plug removed unless the slide control / stop switch is on **STOP** or **0** since there is otherwise a risk of fire from uncontained sparking.

Check condition of the muffler at regular intervals to reduce the risk of fires and damage to hearing. Do not operate your machine if the muffler is damaged or missing.

Do not touch a hot muffler since burn injury will result.

Vibration behavior is influenced by the condition of the AV elements – check the AV elements at regular intervals.

Check the chain catcher – and replace it if damaged.

Shut off the engine

– before checking chain tension.
– before retensioning the chain.
– before replacing the chain.
– before rectifying problems.

Observe sharpening instructions for safe and correct handling of saw chain and guide bar.
Keep the chain in good condition at all times. It must be properly sharpened, tensioned and well lubricated.

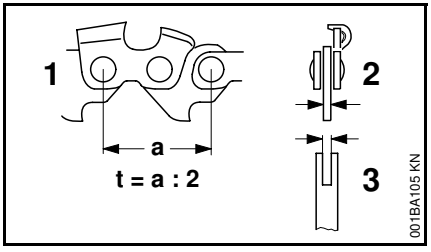
Always change the chain, guide bar and sprocket in good time.

Check condition of clutch drum periodically.

Store fuel and chain lubricant in properly labelled, safety-type canisters only. Take care when handling gasoline. Avoid direct contact with the skin and avoid inhaling fuel vapour.

To **reduce the risk of injury**, stop using your saw immediately if the chain brake does not function properly.
Take your saw to your local dealer. Do not use the chainsaw until the problem has been rectified (see chapter on "Chain Brake").

Mounting the Bar and Chain

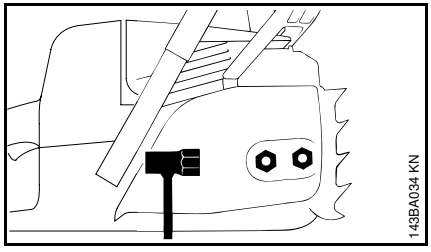


You can run chains of different pitches on this chainsaw – depending on the chain sprocket (see “Specifications”):

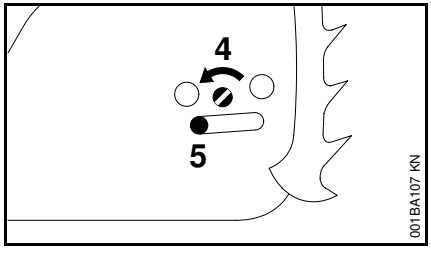
The chain pitch **(1)** must match the pitch of the sprocket and the guide bar (for Rollomatic). The drive link gauge **(2)** must match the bar groove width **(3)**.

The pitch is marked on the chain sprocket and guide bar in inches (e.g. 3/8 or .325). The groove width is marked on the guide bar in millimeters (e.g. 1.6).

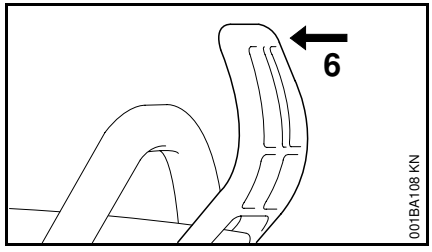
If non-matching components of the wrong pitch or drive link gauge are run together on the same machine they may be damaged beyond repair after a short period of operation.



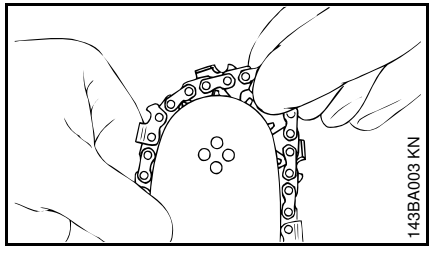
- Unscrew the nuts and take off the chain sprocket cover.



- Turn screw **(4)** counterclockwise until the tensioner slide **(5)** butts against left end of housing slot.



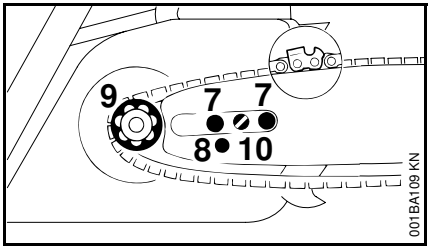
- Disengage the chain brake: Pull hand guard **(6)** toward front handle.



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

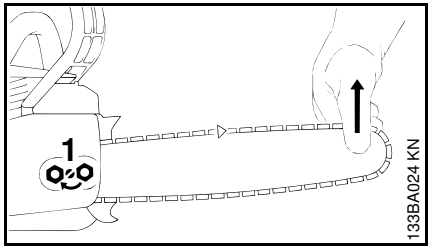
- Fit the chain – start at the bar nose.

Tensioning the Saw Chain



- Fit the guide bar over the studs **(7)** – cutting edges on top of bar must point to right – and engage the peg of the tensioner slide in locating hole **(8)** – place the chain over sprocket **(9)** at the same time.
- Now turn tensioning screw **(10)** clockwise until there is very little chain sag on the underside of the bar – and the drive link tangs are located in the bar groove.
- Refit the sprocket cover – and screw on the nuts only finger-tight.
- Go to “Tensioning the Saw Chain”.

Tensioning the Saw Chain



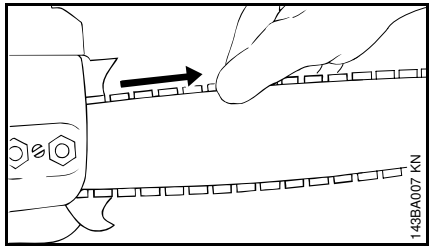
Retensioning during cutting work:

- Shut off the engine first – and then loosen the nuts.
- Hold the bar nose up and use screwdriver to turn tensioning screw **(1)** clockwise until chain fits snugly against the underside of the bar.
- While still holding the bar nose up, tighten down the nuts **firmly**.
- Go to chapter “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 "Operating Instructions".

Checking Chain Tension



- Shut off the engine.
- Wear work gloves.
- Chain must fit snugly against the underside of the bar – and, with the chain brake disengaged, it must still be possible to pull the chain along the bar by hand.
- 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 "Operating Instructions".

Fuel

Your engine requires a mixture of gasoline and engine oil.

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 is specially formulated for use in STIHL engines and guarantees a long engine life.

MotoMix is not available in all markets.

Mixing Fuel

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.

If your machine is equipped with a catalytic converter, you must use unleaded gasoline.

A few tankfuls of leaded gasoline will greatly reduce the efficiency of the catalytic converter.

Engine Oil

Use only quality two-stroke engine oil. We recommend **STIHL two-stroke engine oil since it is specially formulated for use in STIHL engines and guarantees a long engine life**.

If STIHL two-stroke engine oil is not available, use only quality two-stroke oil designed for use in air cooled engines. Do not use oils designed for water cooled engines or engines with a separate lubricating system (e.g. conventional four-stroke engines).

Use only **STIHL 50:1 two-stroke engine oil** for the fuel mix in models with a catalytic converter.

Mix Ratio

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

Other high-quality two-stroke engine oils:
25 parts gasoline to 1 part oil

Examples

Gasoline	STIHL engine oil 50:1		Other high-quality two-stroke engine oils: 25:1	
Liters	Liters	(cc)	Liters	(cc)
1	0.02	(20)	0.04	(40)
5	0.10	(100)	0.20	(200)
10	0.20	(200)	0.40	(400)
15	0.30	(300)	0.60	(600)
20	0.40	(400)	0.80	(800)
25	0.50	(500)	1.00	(1000)

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

Fueling

Storing Fuel

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

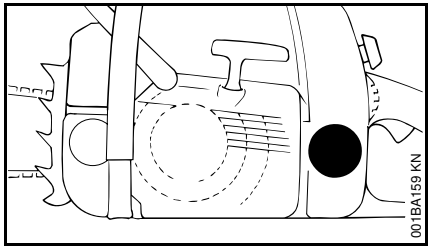
Fuel mix ages:
Only mix sufficient fuel for a few weeks work. Do not store fuel mix for longer than 3 months.
Exposure to light, the sun, low or high temperatures can quickly make the fuel mix unusable.

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

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

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

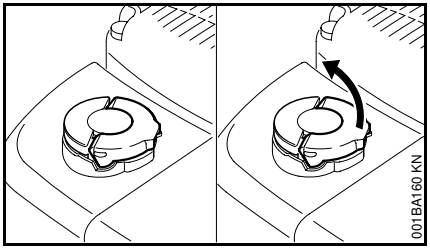
Dispose of remaining fuel and cleaning fluid properly in accordance with local regulations and environment requirements.



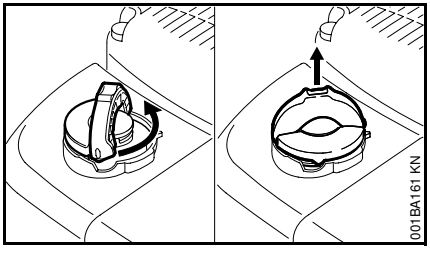
- Before fueling, clean the filler cap and the area around it to ensure that no dirt falls into the tank.
- Position the machine so that the filler cap is facing up.

Take care not to spill fuel while fuelling and do not overfill the tank. STIHL recommends use of the STIHL filling system (special accessory).

Opening the cap



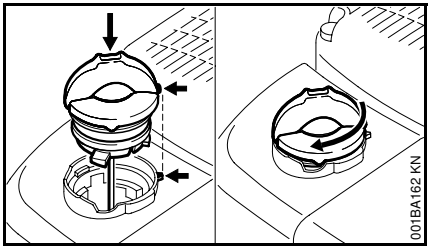
- Raise the grip until it is upright.



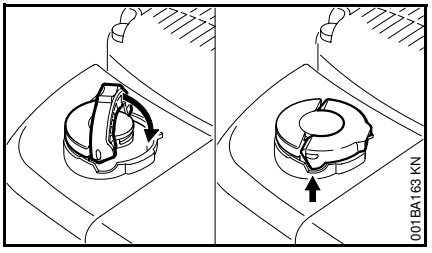
- Turn the cap counterclockwise (approx. a quarter turn).
- Remove the filler cap.

Chain Lubricant

Closing the cap

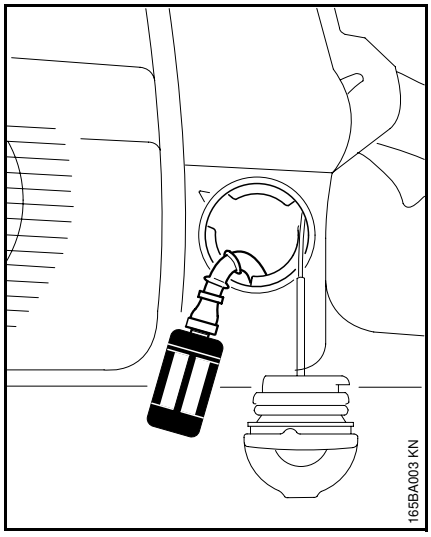


- Fit the cap - grip upright -marks must line up.
- Turn the cap clockwise as far as stop (approx. a quarter turn).



- Fold the grip flush with the top of the cap.

If the grip does not lie completely flush with the cap and the detent on the grip does not engage the recess in the filler neck, the cap is not properly seated and tightened and you must repeat the above steps.



Change the fuel pickup body once every year

- Drain the fuel tank.
- Use a hook to pull the fuel pickup body out of the tank and take it off the hose.
- Push the new pickup body into the hose.
- Place the pickup body in the tank.

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.**

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, clutch and chain. It may even cause the oil pump to seize.

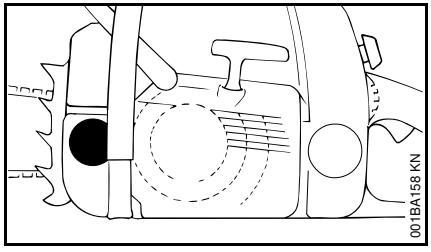
The service life of the chain and guide bar depends on the quality of the lubricant. It is therefore essential to use only a specially formulated chain lubricant.

Filling Chain Oil Tank

If special chain lubricant is not available, you may - in an emergency - use an HD single grade or multigrade engine oil with a viscosity that suits the prevailing outside temperature.

⚠ **Do not use waste oil!**
Medical studies have shown that renewed contact with waste oil can cause skin cancer. Moreover, waste is environmentally harmfull!

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

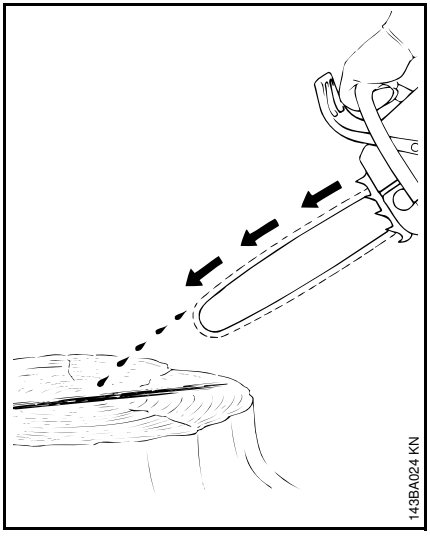


- Thoroughly clean the oil filler cap and the area round it to ensure that no dirt falls into the tank.
- Remove the filler cap.
- Refill the chain oil tank every time you refuel.
- Close the filler cap.

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 servicing dealer for assistance if necessary. STIHL recommends that you have maintenance and repair work performed only by a STIHL servicing dealer.

Checking Chain Lubrication



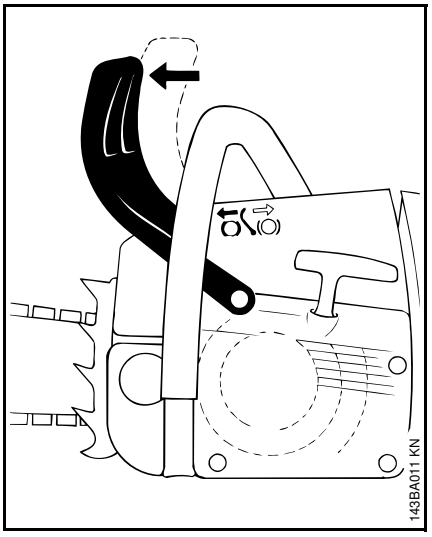
The saw chain must always throw off a small amount of oil.

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 oil level in tank before starting work.

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

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

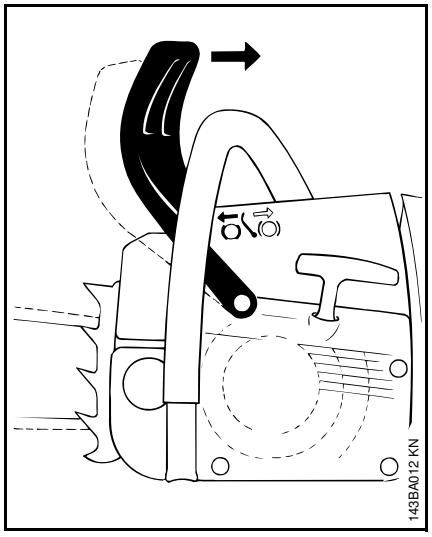
Chain Brake



Locking chain with chain brake

– in an emergency
– when starting
– at idling speed

The chain is stopped and locked when the hand guard is pushed toward the bar nose by the left hand –
or when brake is activated by inertia in certain kickback situations.



Releasing the chain brake

- Pull the hand guard back toward the front handle.

Always disengage chain brake before accelerating engine and before starting cutting work. The only exception to this rule is when you check operation of the chain brake.

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 – even if your left hand is not behind the hand guard, e.g. during felling cut.

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

Check operation of chain brake

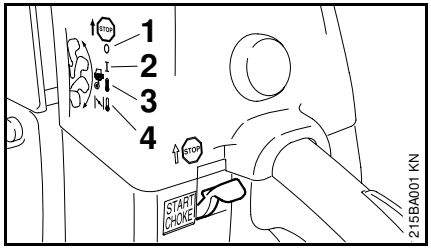
Before starting work:
Run engine at idle speed, engage the chain brake (push hand guard toward bar nose). Accelerate up to full throttle for no more than 3 seconds – the chain must not rotate. The hand guard must be free from dirt and move freely.

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 the maintenance and repair work performed by a STIHL servicing dealer at the following intervals:

Full-time professional users:	every 3 months
Semi-professional users (in agriculture and construction):	every 6 months
Hobby and occasional users:	every 12 months

Information Before You Start



The four positions of the Master Control lever

1 = Engine off – ignition is switched off

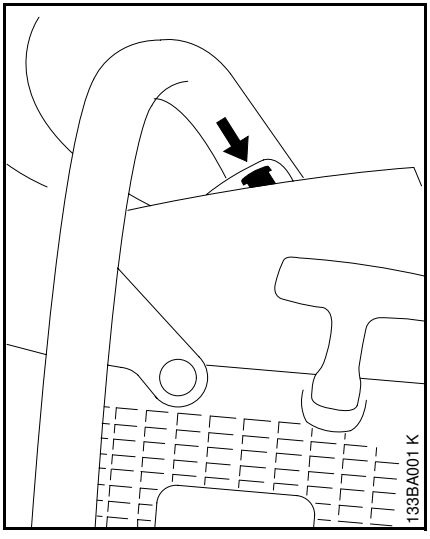
2 = Normal run position – engine runs or can fire

To move the Master Control lever from **2** to **3** or **4**, press down the throttle trigger interlock and squeeze throttle trigger at the same time.

3 = Warm start – 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.

4 = Cold start – this position is used to start a cold engine.

Starting / Stopping the Engine

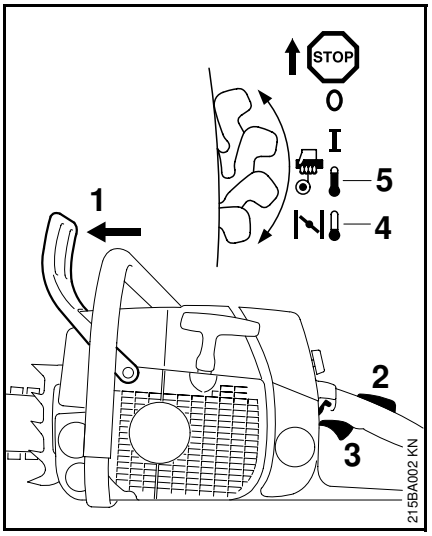


Models with Decompression Valve

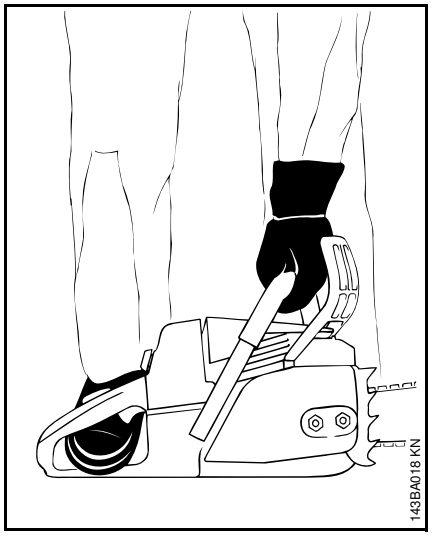
- Press in the button to open the decompression valve.

The decompression valve closes as soon as the engine fires.

- For this reason you must press in the button before each starting attempt.



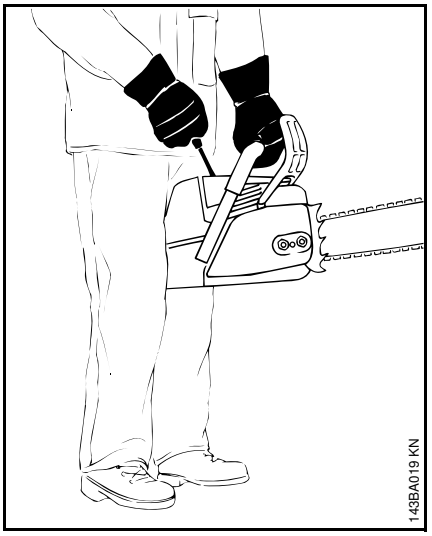
- Observe safety precautions – see chapter on "Safety Precautions and Working Techniques".
- Push hand guard (**1**) forward: The chain is now locked.
- Press down the trigger interlock lever (**2**) and pull the throttle trigger (**3**) at the same time. Set the Master Control to: Position **4** if engine is cold. Position **5** if engine is warm (also use position **5** if the engine has been running but is still cold)



- 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.

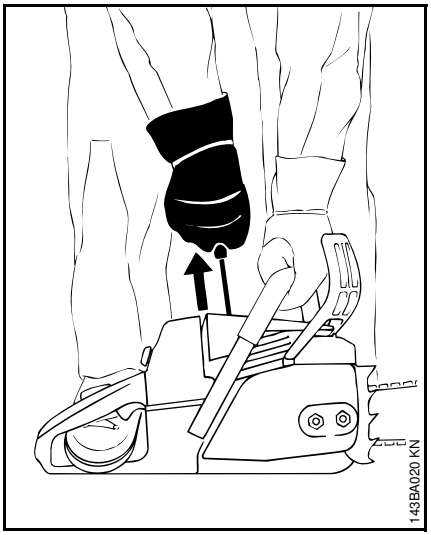
⚠ Bystanders must be well clear of the general work area of the saw.

- Hold the saw firmly on the ground with your left hand on the front handle – your thumb should be under the handlebar.
- Put your right foot into the rear handle and press down.



Alternative method of starting:

- Hold the rear handle tightly between your legs, just above the knees.
- Hold the front handle firmly with your left hand – your thumb should be under the handlebar.

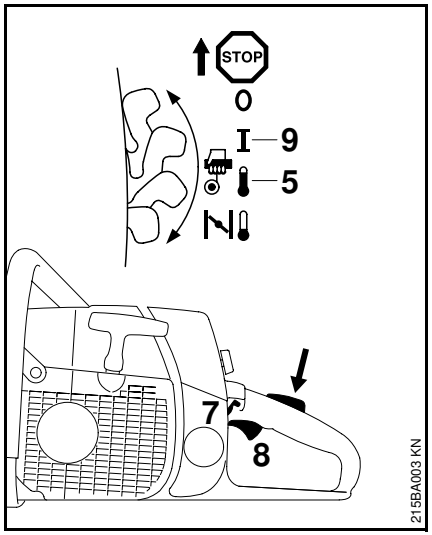


- Pull the starter grip slowly with your right hand until you feel it engage – then give the grip a brisk strong pull and push down the front handle at the same time.

Do not pull out the starter rope all the way – it might otherwise break.

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

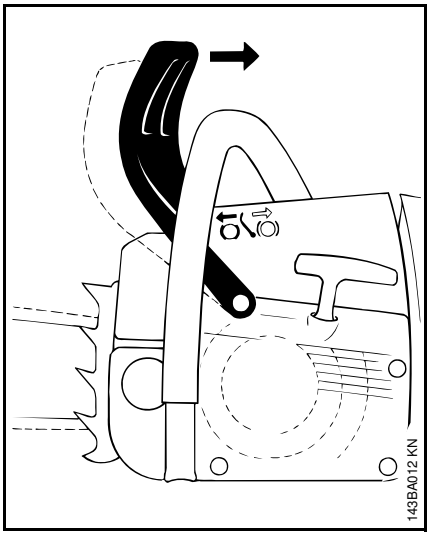
If the engine is new, pull the starter several times to prime the fuel system.



When engine begins to fire:

- Press the button to open the decompression valve again.
- Move Master Control lever (**7**) to position **5** and continue cranking.
- **As soon as the engine runs**, **immediately** blip the throttle trigger (**8**) – the Master Control lever (**7**) will move to the run position **9** and the engine will settle down to idling speed.

As the chain brake is still engaged, the engine must be returned to idling speed **immediately** – or the engine and chain brake might otherwise be damaged.



- Pull the hand guard back toward the front handle:
  The chain brake is now disengaged – your saw is ready for operation.

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

- Observe safety precautions.
- Always check operation of chain lubrication before starting work.

At very low outside temperatures:

- Allow engine to warm up at part throttle.

To shut down the engine:

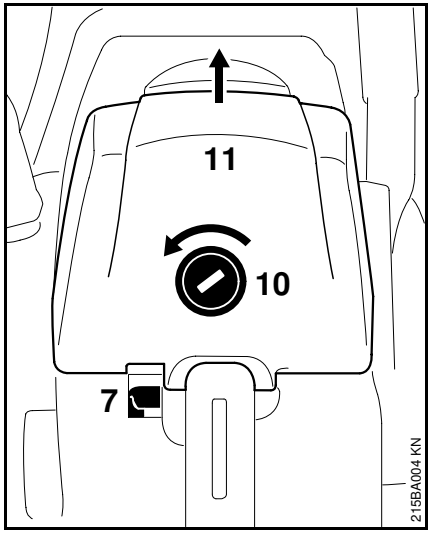
- Move Master Control lever to STOP

If fuel tank has been run until dry and then refueled:

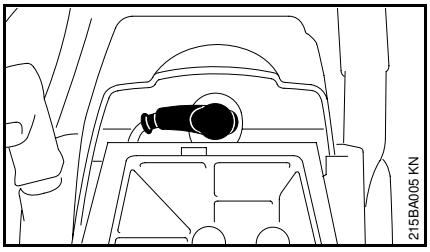
- Press the button to open the decompression valve.
- Pull starter rope several times until fuel system is primed.
- Now start the engine.

If the engine does not start:

If you did not move the Master Control lever to the "warm start" position quickly enough after the engine began to fire, the combustion chamber has flooded.



- Move Master Control (**7**) to run position.
- Loosen knob (**10**) in direction of arrow.
- Remove carburetor box cover (**11**).



- Pull off the spark plug boot.
- Unscrew and dry off the spark plug.
- Set the Master Control lever to STOP
- Press down the trigger interlock lever – open the throttle wide and crank the engine several times with the starter to clear the combustion chamber.
- Install the spark plug and connect the spark plug boot (press it down **firmly**) – reassemble the other parts.
- Set the Master Control lever to the warm start position – even if the engine is cold.
- Press the button to open the decompression valve.
- Now start the engine.

Operating Instructions

During 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 unnecessary 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 engine are greater during this period. The engine develops its maximum power after about 5 to 15 tank fillings.

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

Always disengage the chain brake before opening the throttle. Running the engine at higher revs with the chain brake engaged (saw chain at a standstill) will quickly damage the engine and chain drive (clutch, chain brake).

During operation

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

Chain cold:
Tension is correct when chain fits snugly against the underside of the bar and 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 – the chain may otherwise jump off the bar.
Retension the chain – see “Tensioning the Saw Chain”!

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

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

After finishing work

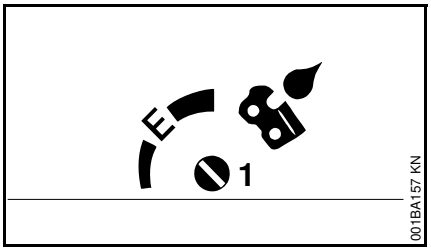
- Slacken off the chain if you have retensioned it at operating temperature during cutting work.

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

Storing your saw for a short period:
Wait for engine to cool down. To avoid condensation, fill the fuel tank and keep the machine in a dry place, well away from sources of ignition, until you need it again.

Storing for a long period:
See “Storing the Unit”!

Oil Quantity Control *

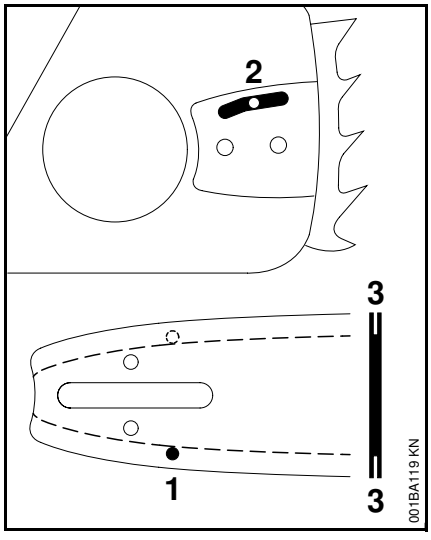


Different quantities of oil are required for different bar lengths, types of wood and cutting techniques.

- Use the adjusting screw **(1)** (on underside of machine) to vary the oil feed rate as required.
- ***E*** = Ematic position, medium oil flow rate - turn adjusting screw to "***E***" (Ematic position)
- To increase oil feed – turn adjusting screw clockwise.
- To reduce oil feed – turn adjusting screw counter-clockwise.

Your chain must always be wetted with a film of lubricant.

Taking Care of Guide Bar



- **Turn the bar over** – every time you sharpen the chain and every time you replace the chain – this helps avoid one-sided wear, especially at the nose and underside of the bar.
- Regularly clean the oil inlet hole **(1)**, the oilway **(2)** and the bar groove **(3)**.
- **Measure groove depth –** with scale on filing gauge* – in area used most for cutting.

Chain type	Pitch	Minimum groove depth
Picco	3/8" P	5.0 mm
Rapid	1/4"	4.0 mm
Rapid	3/8"; 0.325"	6.0 mm
Rapid	0.404"	7.0 mm

If groove depth is less than specified:

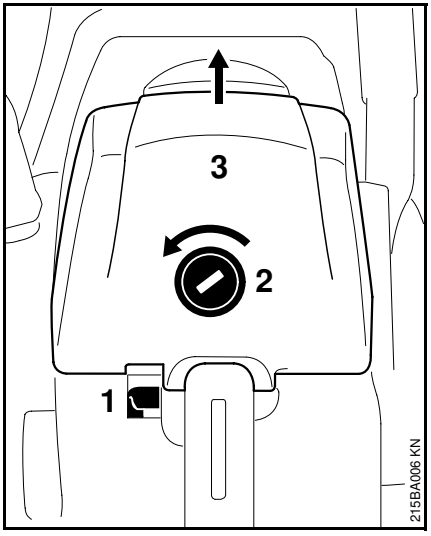
- Replace the guide bar.

The drive link tangs will otherwise scrape along the bottom of the groove **–** the cutters and tie straps will not ride on the bar rails.

* Special accessory

* see “Guide to Using this Manual”

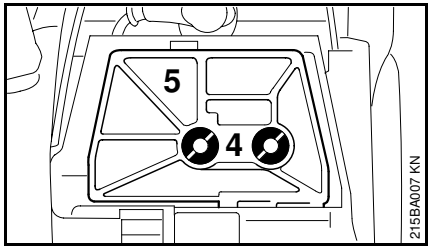
Cleaning the Air Filter

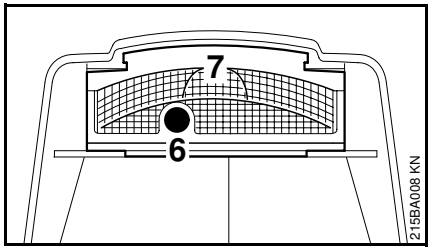


Dirty air filters reduce engine power, increase fuel consumption and make starting more difficult.

If there is a noticeable loss of engine power

- Move the Master Control lever (**1**) to the normal run position.
- Loosen knob (**2**) in direction of arrow.
- Remove the carburetor box cover (**3**).
- Clean away loose dirt from around the filter.



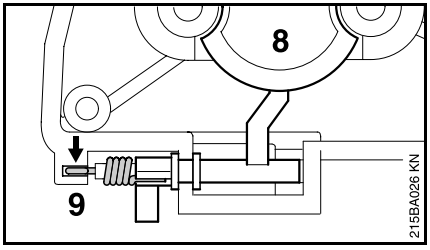


- Unscrew the slotted nuts (**4**).
- Remove the filter (**5**) and separate the two halves of the filter.
- Take out the screw (**6**) in the carburtetor box cover and remove the prefilter (**7**).
- Knock the filter out on the palm of your hand or blow it clear with compressed air from the inside outwards.

Do not use a brush to clean the fleece filter.

In case of stubborn dirt:

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



- Reassemble the filter components.
- Make sure the choke shutter (8) and torsion spring are properly seated: The hook of the torsion spring (9) must engage the slot (arrow).
- Secure the main filter and prefilter in position.
- Fit the carburetor box cover.

Adjusting the Carburetor

General Information

Your carburetor comes from the factory with a standard setting.

This is the optimum setting under the barometric pressure and climatic conditions at the factory.

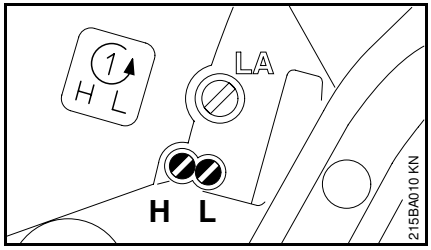
It ensures your machine will deliver maximum power, be fuel efficient and operate reliably.

Retuning may be necessary if there is a change in barometric pressure (weather, altitude), temperature or humidity.

Adjustment of the high speed screw changes the power output and maximum RPM of the engine when it is running off load.

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

Standard Setting
(without tachometer)



- Shut off the engine.
- Check the air filter and clean or replace it if necessary.
- Carefully screw both adjusting screws down onto their seats (clockwise).
- Open high speed screw (**H**) one full turn.
- Open the low speed screw (**L**) one full turn.

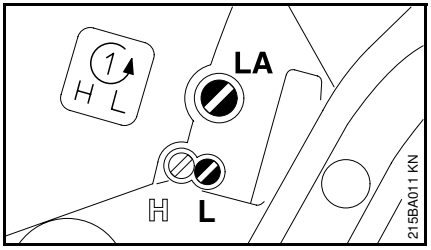
If you do not have a tachometer, do not set the high speed screw any leaner by turning it beyond the standard setting.

Fine Tuning
(with tachometer)

- Check the air filter and clean or replace it if necessary.
- Check chain tension.
- Start the engine and run until it is warm.
- Adjust idle speed correctly (chain must not rotate).
- Starting from the standard setting, use the high speed screw (**H**) to adjust the maximum engine speed with a tachometer to 12,500 rpm (with bar and properly tensioned chain).

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

Adjusting Idle Speed



Engine stops while idling

- Open the low speed screw (**L**) one full turn.
- Turn the idle speed screw (**LA**) clockwise until chain begins to run – then turn it back one quarter of a turn.

Chain runs when engine is idling

- Open the low speed screw (**L**) one full turn.
- Turn the idle speed screw (**LA**) counterclockwise until chain stops running – then turn screw another quarter turn in the same direction.

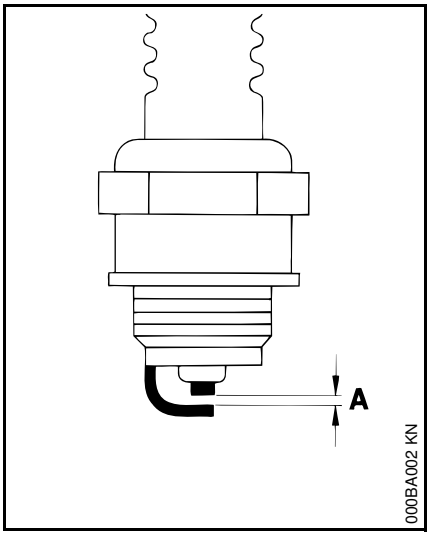
Erratic idling behavior, poor acceleration
(even though the low speed screw is opened one turn)

Idle setting is too lean.

- Turn the low speed screw (**L**) counterclockwise until 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**).

Checking the Spark Plug



If engine is down on power, difficult to start or runs poorly at idle speed, first check the spark plug.

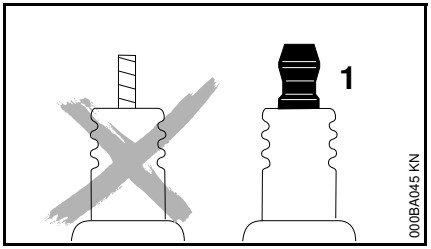
- Remove the spark plug – see "Starting / Stopping the Engine".
- Clean dirty spark plug.
- Check electrode gap (**A**) and readjust if necessary – see "Specifications".

- Rectify the problems which have caused fouling of spark plug:

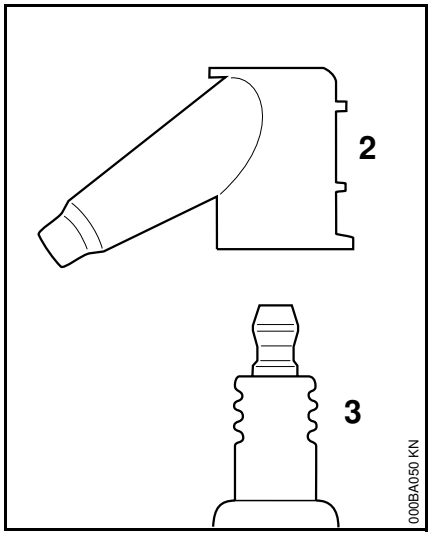
– To much oil in fuel mix.
– Dirty air filter.
– Unfavorable running conditions.

- **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".

To reduce the risk of arcing and fire:



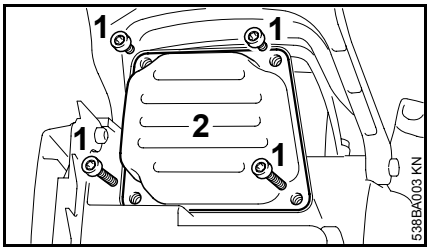
- If the spark plug comes with a detachable adapter nut (**1**), screw it on **firmly**.



On all spark plugs:

- Always press the boot (**2**) **firmly** on to the spark plug (**3**).

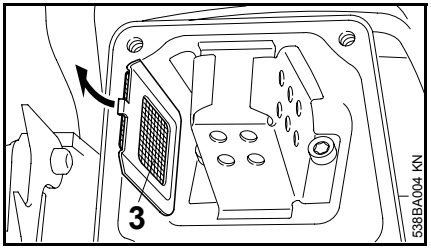
Spark Arresting Screen in Muffler*



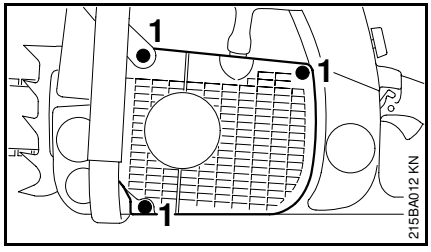
- If the engine is down on power, check the spark arresting screen in the muffler.
- Wait for the muffler to cool down.
- Take out the screw (**1**).
- Remove the muffler exhaust casing (**2**).

* see “Guide to Using this Manual”

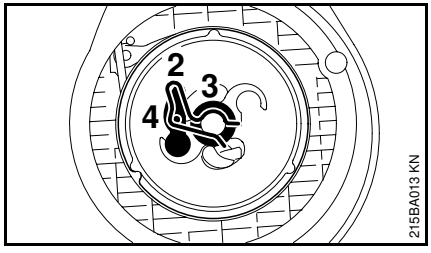
Replacing Starter Rope and Rewind Spring



- Pull out the spark arresting screen (**3**).
- Clean the spark arresting screen. If the screen is damaged or heavily carbonized, fit a new one.
- Refit the spark arresting screen and the muffler exhaust casing.

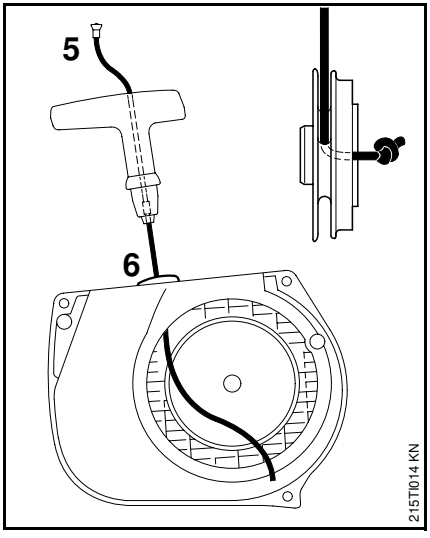


- Remove the screws (**1**).
- Lift the fan housing from the crankcase and pull it away to sideways.

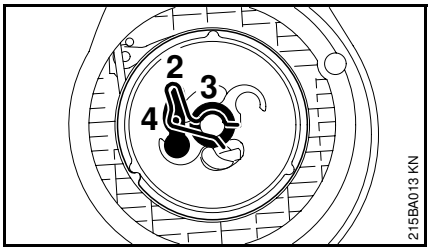


- Use a screwdriver or suitable pliers to carefully remove the spring clip (**2**) from the starter post.
- Carefully remove the rope rotor with washer (**3**) and pawl (**4**).

⚠ The rewind spring may pop out during this procedure – **take care to avoid injury.**

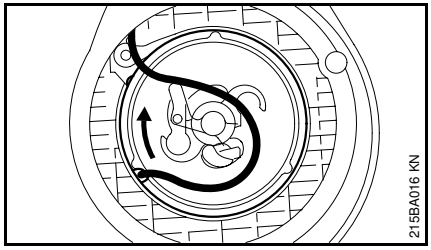


- Use a screwdriver to pry the rope (**5**) out of the starter grip.
- Remove the remaining rope from the rotor and grip, making sure the sleeve is not pushed out of the grip.
- Thread the new rope through the top of the starter grip and guide bushing (**6**).
- Pull the rope through the rotor and secure it with a simple overhand knot.



- Coat rope rotor bearing bore with resin-free oil.
- Slip rotor over the starter post – turn it back and forth to engage anchor loop of the rewind spring.
- Fit the pawl (**4**) in the rope rotor.
- Fit the washer (**3**) on the starter post.
- Use a screwdriver or suitable pliers to install the spring clip (**2**) on the starter post and engage it on the pawl's peg – the spring clip must point clockwise as shown in the illustration.

Tensioning the Rewind Spring



- Make a loop in the unwound starter rope and use it to turn the rope rotor seven full revolutions in the direction of the arrow.
- Hold the rotor steady – pull out and straighten the twisted rope.
- Release the rope rotor.
- Let go of rope slowly so that it winds onto the rotor.

The starter grip must locate firmly in the rope guide bushing. If the grip droops to one side: Increase spring tension by adding one more turn.

When the starter rope is fully extended it must still be possible to rotate the rotor another half turn. If this is not the case, the spring is overtensioned and could break.

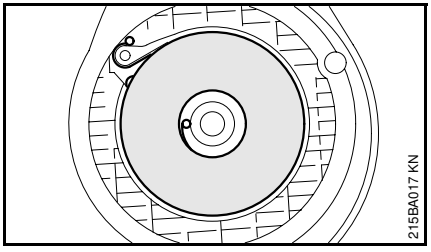
- Take one turn of rope off the rotor in such a case.

Replacing a Broken Rewind Spring

- Remove the rope rotor.
- Remove the spring housing and parts of the spring.

⚠ The bits of spring might still be under tension and could fly apart when you take them out of the fan cover. To reduce risk of injury, wear eye and face protection and work gloves.

- Use a screwdriver to carefully remove the parts of the spring.
- Lubricate the new spring with a few drops of non-resinous oil.



- Fit the new spring housing – bottom plate must face up – engage outer spring loop on lug.
- Refit the rope rotor.
- Tension the rewind spring.
- Refit the fan housing and tighten it down firmly.
- If the spring pops out of the housing during installation: Refit it in the counterclockwise direction, starting outside and working inwards.

Storing the Machine

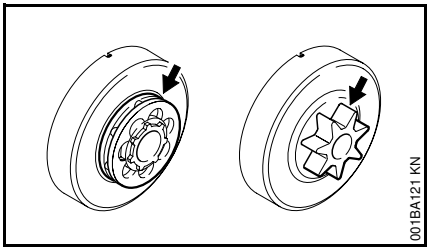
For periods of about 3 months or longer:

- Drain and clean the fuel tank in a well ventilated area.
- Dispose of remaining fuel and cleaning solution properly in accordance with local environmental requirements.
- Run engine until 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 unit, 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 unit in a dry and high or locked location, out of the reach of children and other unauthorized persons.

Checking and Replacing Chain Sprocket

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

Replacing the Chain Sprocket



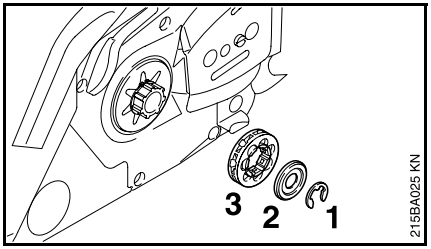
– Replace the chain sprocket after using two Oilomatic chains.

– Replace sooner if the wear marks on the sprocket are deeper than approx. 0.5 mm since this would reduce the life of the chain. You can use a reference gauge (Special Accessories) to check the depth of the wear marks on sprockets.

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

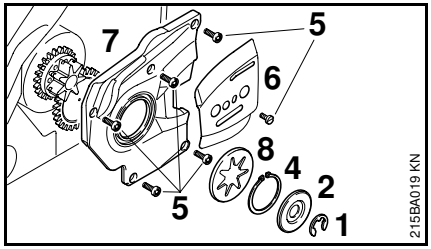
STIHL recommends the use of original STIHL sprockets to ensure correct operation of the chain brake.

Rim Sprocket

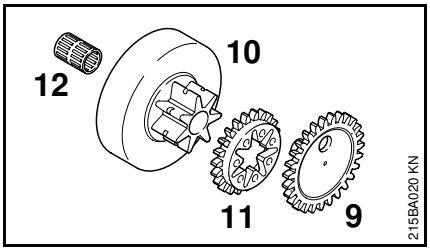


- Use a screwdriver to remove the E-clip (**1**).
- Take off the washer (**2**).
- Examine the splines on the clutch drum – if wear marks are severe, install a new clutch drum.
- Replace the rim sprocket (**3**) with cavities facing outward.
- Refit the washer and E-clip on the crankshaft.

Spur Sprocket, Clutch Drum



- Use a screwdriver to remove the E-clip (**1**).
- Take off the washer (**2**).
- Use circlip pliers (Special Accessories) to remove the circlip (**4**).
- Take out the screws (**5**).
- Remove the side plate (**6**) and cover (**7**) with cover washer (**8**).



- Remove the oil pump drive worm (**9**) by rotating it clockwise while pulling it off the pump shaft.
- Remove the spur sprocket or clutch drum (**10**) with sprocket, spur gear (**11**) and needle cage (**12**) from the crankshaft.

Check serviceability of spur gear and worm. Replace any worn or damaged parts.

Install in the reverse sequence:

- Clean the stub of the crankshaft and needle cage and lubricate with STIHL grease (Special Accessories).
- Push the needle cage, spur sprocket and clutch drum with spur gear onto the crankshaft.
- Engage the oil pump drive worm by rotating it counterclockwise while pushing it onto the pump shaft.
- Lubricate the worm and spur gear with STIHL grease (Special Accessories).
- Fit the cover, cover washer and side plate, fit screws and tighten down firmly.
- Install the circlip on the spur sprocket – each end of the ring must locate on the top of a tooth.
- Replace the rim sprocket (**3**) with cavities facing outward.
- Fit the washer and E-clip on the crankshaft.

Maintaining and Sharpening Saw Chain

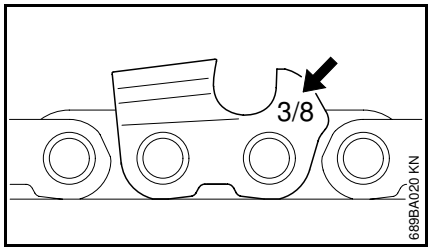
Correctly sharpened chain

A properly sharpened chain slices through wood effortlessly and requires very little feed pressure.

Do not work with a dull or damaged chain as it will increase the physical effort required, cause high vibrations, produce unsatisfactory cutting results and a higher rate of wear.

- Clean the chain.
- Check the chain for cracks in the links and damaged rivets.
- Replace any damaged or worn parts of the chain and match the new parts to the shape and size of the original parts.

⚠ It is absolutely essential to comply with the angles and dimensions specified below. If the saw chain is **incorrectly sharpened** – and in particular if the depth gauge is set too low – there is a risk of increased kickback of the chainsaw, with resulting **risk of injury**.

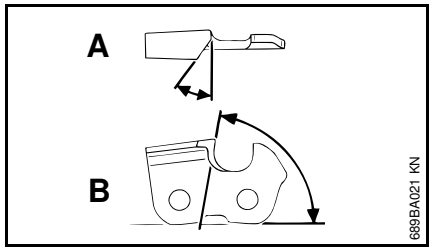


The chain pitch (e.g. $^{3}/_{8}$") is marked on the depth gauge end of each cutter.

Use only special saw chain sharpening files. Other files have the wrong shape and cut.

Select file diameter according to chain pitch – see table “Sharpening Tools”.

You must observe certain angles when resharpening the chain cutter.



A = Filing angle

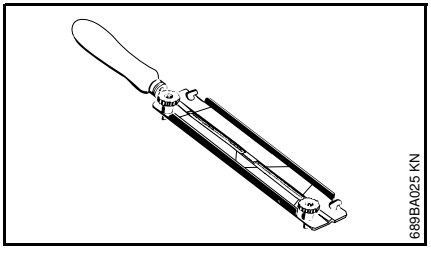
B = Side plate angle

Chain type	Angle (°)	
	A	B
Rapid-Micro (RM)	30	85
Rapid-Super (RS)	30	60
Picco-Micro (PM/PMN)	30	85

Cutter shapes:
Micro = Semi-chisel
Super = Full chisel

The specified angles A and B are obtained automatically if the recommended files or sharpening tools and correct settings are used.

Furthermore, the angles must be the same on all cutters. If angles are uneven: Chain will run roughly, not in a straight line, wear quickly and finally break.

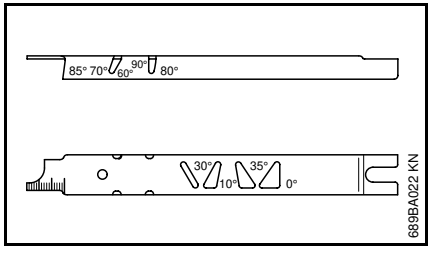


As these requirements can be met only after sufficient and constant practice:

- **Use a file holder**

A file holder (special accessory) must be used for manual resharpening (see table "Sharpening Tools"). The correct filing angles are marked on the file holder.

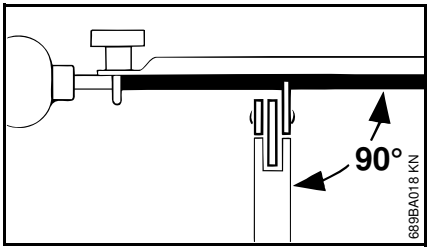
For checking angles

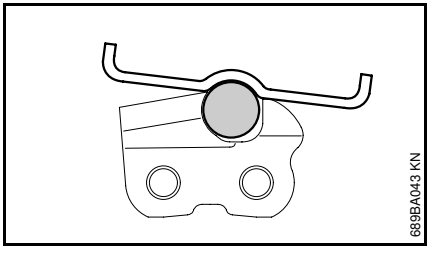


Use a STIHL filing gauge (special accessory – see table "Sharpening Tools"). This is a universal tool for checking the filing and side plate angles, depth gauge setting and cutter length. It also cleans the guide bar groove and oil inlet holes.

File correctly

- Select sharpening tools according to chain pitch.
- Clamp the bar in a vise if necessary.
- Lock the chain – push hand guard forward.
- To rotate the chain, pull the hand guard against the front handle to disengage the chain brake. On models with QuickStop Super, also press down the throttle trigger interlock lever.
- Sharpen chain frequently, take away as little metal as possible – two or three strokes of the file are usually enough.





- Hold the file **horizontally** (at right angle to side of guide bar) and file according to the angles marked on the file holder. Rest the file holder on the top plate and depth gauge.

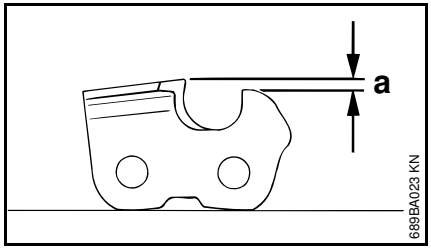
- Always file from the inside to the outside of the cutter.
- The file only sharpens on the forward stroke –
  lift the file off the cutter on the backstroke.
- Avoid touching the tie straps and drive links with the file.
- Rotate the file at regular intervals while filing to avoid one-sided wear.
- Use a piece of hardwood to remove burrs from cutting edge.
- Check angles with the filing gauge.

All cutters must be the same length.

If the cutters are not the same length, they will have different heights. This makes the chain run roughly and can cause it to break.

- Find the shortest cutter and then file all other cutters back to the same length. This can be very time consuming – it is best to have it done in the workshop on an electric grinder.

Depth gauge setting



The depth gauge determines the height at which the cutter enters the wood and thus the thickness of the chip removed.

Specified distance or setting between depth gauge and cutting edge = **a:**

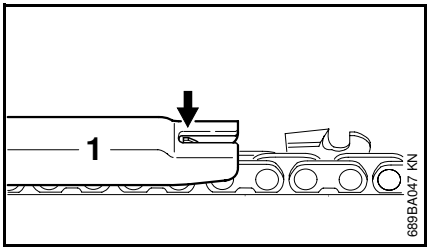
This setting may be increased by 0.2mm (0.008") for cutting softwood in mild weather season – no frost.

Chain pitch		Depth gauge setting "**a**"	
Inch	(mm)	mm	(inch)
$^{1}/_{4}$	(6.35)	0.65	(0.026)
$^{3}/_{8}$ PMN	(9.32)	0.45	(0.018)
$^{3}/_{8}$ PM	(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)

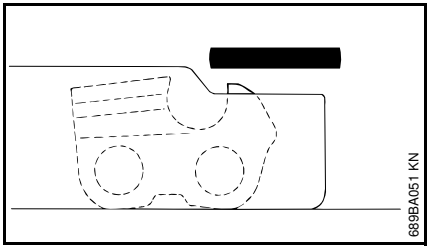
Lowering depth gauges

The depth gauge setting is reduced when the chain is sharpened.

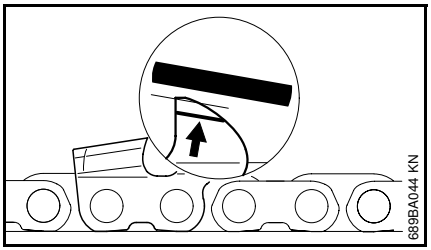
- Use a filing gauge to check the setting every time you sharpen the chain.



- Place a filing gauge (**1**) that matches the chain pitch on the chain – if the depth gauge projects from the filing gauge, the depth gauge has to be lowered.

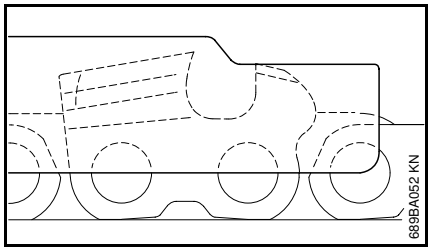


- File down the depth gauge until it is level with the filing gauge.



- File the top of the depth gauge parallel to the stamped service marking (see arrow) – but do not lower the highest point of the depth gauge in this process.

⚠ The kickback tendency of the chainsaw is increased if the depth gauges are too low.



- Place filing gauge on the chain – highest point of depth gauge must be level with the filing gauge.

PM 1, RM2:
Rear hump of tie strap (with service marking) is lowered along with the depth gauge.

RSC3, RMC3, PMC3:
The upper part of the humped drive link (with service marking) is lowered along with the depth gauge.

⚠ The other parts of the triple-humped tie strap and humped drive link must not be filed since this may increase the kickback tendency of the chainsaw.

- After sharpening, clean the chain thoroughly, remove filings or grinding dust – lubricate the chain thoroughly.
- Before long out-of-service period, clean the chain and store it in a well-oiled condition.

Sharpening Tools (special accessories)

Chain pitch		Round file Ø		Round file	File holder	Filing gauge	Flat file[1)]	Sharpening kit[2)]
inch	(mm)	mm	(inch)	Part No.	Part No.	Part No.	Part No.	Part No.
$^{1}/_{4}$	(6.35)	4.0	($^{5}/_{32}$)	5605 772 4006	5605 750 4327	1110 893 4000	0814 252 3356	5605 007 1027
$^{3}/_{8}$ PMN	(9.32)	4.0	($^{5}/_{32}$)	5605 772 4006	5605 750 4327	0000 893 4000	0814 252 3356	5605 007 1026
$^{3}/_{8}$ 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

1) Use triangular file 0811 421 8971 for PM1 and RM2
2) consisting of file holder with round file, flat file and filing gauge

Maintenance Chart

Please note that the following maintenance intervals apply for normal operating conditions only. If your daily working time is longer than normal or cutting conditions are difficult (very dusty work area, resin-rich wood, tropical wood etc.), shorten the specified intervals accordingly. If you only use the saw 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 interlock, Master Control	Check operation	X		X						
Chain brake	Check operation	X		X						
	Have checked by servicing dealer[1)2)]									X
Pickup body/filter in fuel tank	Check					X				
	Clean, replace filter element					X		X		
	Replace pickup body						X		X	X
Fuel tank	Clean					X				
Chain oil tank	Clean					X				
Chain lubrication	Check	X								
Saw 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	
Antivibration elements	Inspect	X						X		
	Have replaced by servicing dealer[1)]								X	
Cooling inlets	Clean		X							
Cylinder fins	Clean		X			X				

1) STIHL recommends that this work be done by a STIHL servicing dealer
2) see "Chain brake"

Please note that the following maintenance intervals apply for normal operating conditions only. If your daily working time is longer than normal or cutting conditions are difficult (very dusty work area, resin-rich wood, tropical wood etc.), shorten the specified intervals accordingly. If you only use the saw 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
Carburetor	Check idle adjustment – chain must not rotate	X		X						
	Readjust idle									X
Spark plug	Readjust electrode gap							X		
	Replace after about 100 operating hours									
All accessible screws and nuts (not adjusting screws) [2]	Retighten									X
Spark arresting screen* in muffler	Inspect							X		
	Clean or replace								X	
Chain catcher	Check	X								
	Replace								X	
Safety label	Replace								X	

1) STIHL recommends that this work be done by a STIHL servicing dealer
2) Firmly tighten cylinder base screws of professional saws (3.4 kW or more) after 10 to 20 hours of operation

* see “Guide to Using this Manual“

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 maintenance and repair work carried out only by an authorized STIHL servicing dealer. STIHL servicing dealers are able to attend regular training courses and receive technical information bulletins on the latest engineering changes.

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

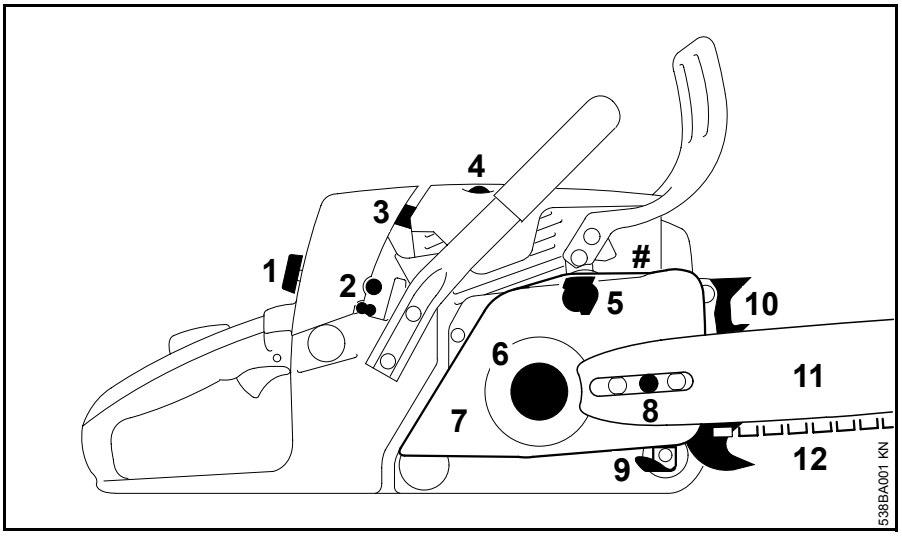
– Damage to the engine due to neglect or deficient maintenance (e.g. of air and fuel filters), incorrect carburetor adjustment or inadequate cleaning of cooling air inlets (intake ports, cylinder fins).
– Corrosion and other consequential damage resulting from improper storage.
– Damage to the product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

Parts Subject to Wear and Tear

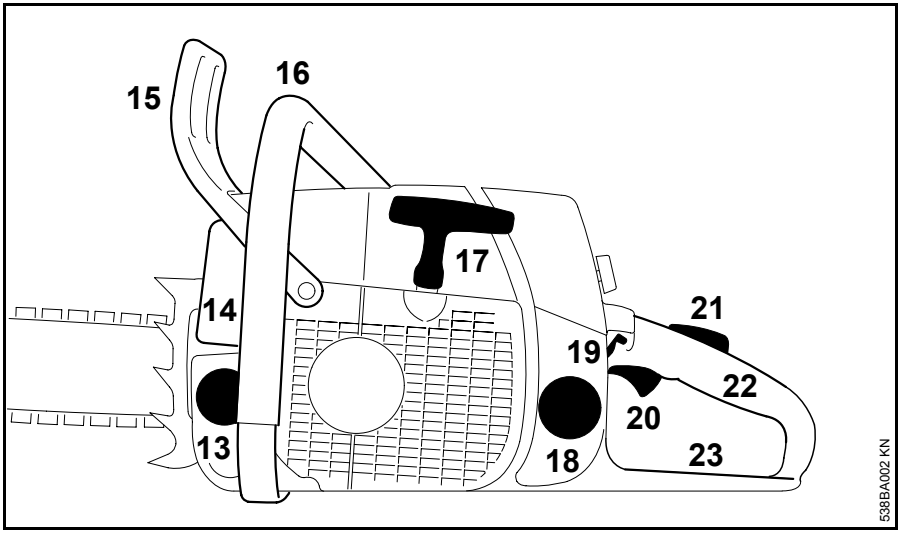
Some parts of the power tool are subject to normal wear and tear even during regular operation in accordance with instructions and, depending on the type and duration of use, have to be replaced in good time.
Among other parts, this includes:

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

Main Parts and Controls



1 Carburetor box cover twist lock
2 Carburetor adjusting screws
3 Spark plug boot
4 Decompression valve*
5 Chain brake
6 Chain sprocket
7 Chain sprocket cover
8 Chain tensioner
9 Chain catcher
10 Spiked bumper
11 Guide bar
12 Oilomatic saw chain
Serial number



13 Oil tank filler cap
14 Muffler with spark arresting screens*
15 Front hand guard
16 Front handle (handlebar)
17 Starter grip
18 Fuel tank filler cap
19 Master Control lever
20 Throttle trigger
21 Throttle trigger interlock
22 Rear handle
23 Rear hand guard

* see "Guide to Using this Manual"

Specifications

Engine

STIHL single cylinder two-stroke engine

Displacement	72.2 cm^3
Bore	52 mm
Stroke	34 mm
MS 381	
Engine power to ISO 7293	3.9 kW (5.3 HP)
MS 381 N[2)]	
Engine power to ISO 7293	3.6 kW (4.9 HP)
Idle speed	2,400 rpm
Maximum permissible engine speed with bar and chain	12,500 rpm
Sound pressure level L_{peq} to ISO 22868 [1)]	102,3 dB (A)
Sound power level L_{weq} to ISO 9207 [1)]	113,9 dB (A)
Vibration measurement a_{eq} to ISO 7505 [1)]	
Left handle	5.2 m/s^2
Right handle	7.1 m/s^2

1) Weighted equivalent level includes idling, full load and racing with the same duration of exposure
2) Low compression engine

Magneto ignition system,
electronic

Spark plug (suppressed)
Bosch WSR 6 F, NGK BPMR 7 A,
Electrode gap: 0.5 mm

Carburetor
All position diaphragm carburetor with integral fuel pump

Fuel tank capacity: 0.68 l (680 cm^3)

Oil tank capacity: 0.36 l (360 cm^3)

Weight (without cutting attachment)
6.6 kg

Cutting Attachment:

Guide bars
Rollomatic, Duromatic

Cutting lengths
Rollomatic 37, 40, 45, 50, 55 and 63 cm
Duromatic 37, 40, 45, 50, 55 and 63 cm

Oilomatic chain
9.32 mm (3/8") Rapid
Drive link gauge: 1.6 mm

Chain sprockets
7 and 8-tooth rim sprockets
7-tooth spur sprocket

Chain lubrication
Fully automatic, speed-controlled rotary piston oil pump. Additional manual oil flow control

Special Accessories

File holder with round file

Filing gauge

Reference gauges

STIHL lubricating grease

STIHL filler nozzle for STIHL canisters

helps avoid spills and overfilling during refueling.

Contact your STIHL dealer for more information on these and other special accessories.

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 all maintenance and repair work be carried out by an authorized STIHL dealer. STIHL dealers regularly 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 equivalent. Only use high-quality replacement parts in order to avoid the risk of accidents or damage to the machine.

STIHL recommends the use of genuine 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.

Manufacturer's declaration of conformity

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

certify that the new machine described below

Category:	Chainsaw
Make:	STIHL
Model:	MS 381
Serial identification:	1119
Displacement:	72,2 cm^3

conforms to the specifications of Directives 98/37/EC and 89/336/EEC.

The product has been developed and manufactured in compliance with the following standards:
EN ISO 11681-1, EN 61000-6-1, EN 55012

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

measured sound power level:
115 dB(A)
guaranteed sound power level:
116 dB(A)

Technical documents deposited at:
ANDREAS STIHL AG & Co. KG
Produktzulassung
(Product Licensing)

The CE type examination was carried out by

Deutsche Prüfstelle für Land- und Forsttechnik (DPLF)
Postfach 41 03 56
34114 Kassel

Certification number
K-EG-2003/3756

See CE label for machine's year of manufacture.

Waiblingen, September 12, 2006

ANDREAS STIHL AG & Co. KG

Elsner
Director
Group Product Management

Quality Certification

All STIHL products comply with the highest quality standards.

An independent organization has certified that all products manufactured by STIHL meet the strict requirements of the ISO 9001 standard for quality management systems in terms of product development, materials purchasing, production, assembly, documentation and customer service.

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