

STIHL[®]

STIHL FS 90

Instruction Manual



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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



STIHL®

FS 90, FS 90 R

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 brushcutter is a high-speed, fast-cutting power tool, special safety precautions must be observed to reduce the risk of personal injury.



It is important that you read and understand the instruction manual before using your brushcutter for the first time and keep it in a safe place for later

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 brushcutter model before: Have your dealer or other experienced user show you how to operate your brushcutter or attend a special course of training in brushcutter operation.

Minors should never be allowed to use a brushcutter.

Bystanders, especially children, and animals should not be allowed in the area where a brushcutter 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 operator is responsible for avoiding injury to third parties or damage to their property.

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

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

If you have any condition that may be aggravated by strenuous work, check with your doctor before operating a brushcutter.

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 health risks of serious, STIHL recommends that persons with pacemaker 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.

Depending on the cutting tool fitted, use your brushcutter only for cutting grass, wild growth, shrubs, scrub, bushes, small diameter trees and similar materials.

Do not use your brushcutter for any other purpose since this may result in accidents or damage to the machine.

Never attempt to modify your brushcutter in any way since this may also result in accidents or damage to the machine.

Only use cutting attachments and accessories that are explicitly approved for this power tool model by STIHL or are technically identical. If you have any questions in this respect, consult a specialist dealer. To reduce the risk of accidents or damage to the machine, use only high quality tools and replacement parts.

STIHL recommends the use of STIHL original tools and accessories. The characteristics of these components are specifically designed to match your machine and meet your performance requirements.

The deflector provided with your machine may not protect the operator from all foreign objects (stones, glass, wire, etc.) thrown by the rotating cutting attachment. Thrown objects may also ricochet and strike the operator.

Clothing and Equipment

Wear proper protective clothing and equipment.



Clothing must be sturdy but allow complete freedom of movement. Wear snug-fitting clothing – an overall and jacket combination is recommended, do not wear a coat.

Do not wear loose-fitting garments, scarves, jewelry or anything that could restrict movement or become entangled with wood, brush or moving parts of the machine. 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.

Sturdy shoes with non-slip soles may be worn as an alternative only when

using mowing heads.



Wear a **safety hard hat** for thinning operations, when working in high scrub and where there is a danger of head injuries from falling objects. To

reduce the risk of injury from thrown objects, always wear a face shield **and safety glasses**.

Warning! A face shield alone does not provide adequate eye protection.

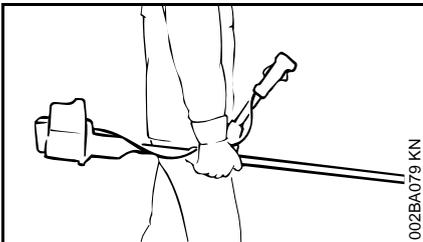
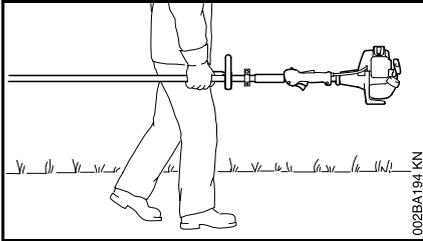
Wear hearing protection, e.g. ear plugs or ear muffs.



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

STIHL offers a comprehensive range of safety clothing and equipment.

Transporting the Unit



Always turn off the engine.

Carry the unit hanging from the shoulder strap or properly balanced by the drive tube. Fit transport guard on metal cutting tools to avoid the risk of injury from blade contact.

Transporting by vehicle: When transporting in a vehicle, properly secure your brushcutter 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 brushcutter in a well-ventilated area, outdoors only. If you spill fuel, wipe the machine 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.

To reduce the **risk of serious or fatal burn injuries**, check for fuel leakage. If fuel leakage is found, do not start or run the engine until leak is fixed.

Before Starting

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

- Use only an approved combination of cutting tool, deflector, handle and harness. All parts must be assembled properly and securely.
- Slide control /stop switch must move easily to **STOP** or **0**.
- Smooth action of throttle trigger and throttle trigger interlock (where fitted) – throttle trigger must return automatically to idle position.
- Check that spark plug boot is secure – a loose boot may cause arcing that could ignite combustible fumes and cause a fire.
- Cutting tools and attachments: Check for correct and secure assembly and good condition.
- Check protective devices (e.g. deflector for cutting tool, rider plate) for damage or wear. Always replace damaged parts. Do not operate your machine with a damaged deflector or worn rider plate (lettering and arrows no longer legible).

- Never attempt to modify the controls or safety devices
- Keep the handles dry and clean – free from oil and pitch – for safe control
- Adjust harness and handle(s) to suit your height and reach. See chapter on "Fitting the Harness – Balancing the Brushcutter"

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

If you use a shoulder strap or full harness: Practise removing and putting down the machine as you would in an emergency. To avoid damage, do not throw the machine to the ground when practising.

Starting the Engine

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

Place the unit on firm ground in an open area. Make sure you have good balance and footing. Hold the unit securely. The cutting tool must be clear of the ground and all other obstructions because it may rotate when the engine starts.

Your brushcutter is a one-person unit. To reduce the risk of injury from thrown objects, do not allow other persons within a radius of 15 meters of your own position – even when starting.



To reduce the risk of injury, avoid contact with the cutting tool.



Do not drop start the engine. The correct starting procedure is described in your instruction manual. Note that the cutting tool

continues to rotate for a short period after you let go of the throttle trigger – flywheel effect.

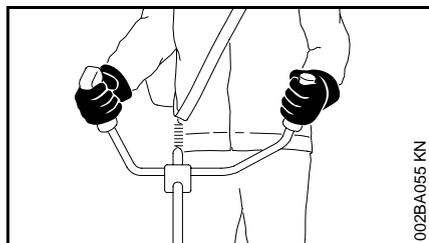
Check idle speed: The cutting tool must not rotate when the engine is idling with the throttle trigger released.

To reduce the risk of fire, keep hot exhaust gases and hot muffler away from easily combustible materials (e.g. wood chips, bark, dry grass, fuel).

Holding and Controlling the Unit

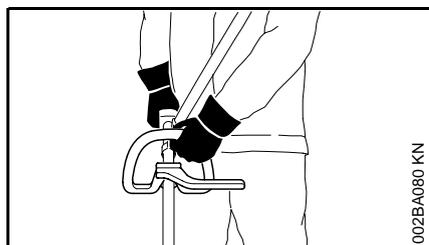
Always hold the machine **firmly with both hands** on the handles. Make sure you always have a firm footing.

Models with bike handle



Right hand on control handle, left hand on left handle.

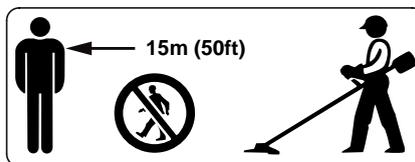
Models with loop handle



On units with a loop handle and barrier bar, left hand on loop handle, right hand on control handle, even if you are left-handed.

During Operation

In the event of impending danger or in an emergency, switch off the engine immediately by moving the slide control / stop switch to **0** or .



To reduce the risk of personal injury from thrown objects, do not allow any other persons within a radius of 15 meters of your own position. Also maintain this distance from to reduce the risk of damage to property (parked vehicles, windows).

The correct engine idle speed is important to ensure that the cutting tool stops rotating when you let go of the throttle trigger.

Check and correct the idle speed adjustment regularly. If the cutting tool still rotates at idle speed, have your dealer make proper adjustments and repairs.

Take special care in slippery conditions – damp, snow, ice, on slopes, uneven ground, etc.

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

Ensure you always have a firm and safe footing.

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.

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



Your power tool produces toxic exhaust fumes as soon as the engine is running. These fumes may be colorless and odorless and contain

unburned 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.

Operate your power tool so that it produces a minimum of noise and emissions – do not run engine unnecessarily, accelerate the engine only for cutting.

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

The dusts, vapor and smoke produced during operation may be dangerous to health. If the work area is very dusty or smoky, wear a respirator.

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

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

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



To reduce the risk of personal injury from thrown objects, never operate the unit

without the proper deflector for the type of cutting tool being used.



Before cutting, inspect the area for stones, glass, pieces of metal or other solid objects which could damage the cutting tool or be thrown and cause

damage to property (e.g. parked vehicles, windows).

Special care must be taken when working in difficult, over-grown terrain.

When cutting high scrub, under bushes and hedges: Keep cutting tool at minimum height of 15 cm to avoid harming small animals (e.g. hedgehogs).

Always shut off the engine before leaving the unit unattended.

Check the cutting tool at regular short intervals. If behavior of cutting tool changes, check it immediately:

- Turn off the engine. Hold brushcutter firmly and press the cutting tool into the ground to bring it to a standstill.
- Check condition – look for cracks.
- Check sharpness.
- Replace damaged or dull cutting tools immediately, even if they have only superficial cracks. Perform ringing test on metal cutting tools.

Clean grass and plant residue off the cutting tool mounting at regular intervals. If the cutting tool or deflector becomes clogged or stuck, always turn off the engine and make sure the cutting tool has stopped before cleaning.

To reduce the risk of unintentional engine start and injury, always shut off the engine and remove the spark plug boot before replacing the cutting tool.

Never repair damaged or cracked cutting tools by welding, straightening or modifying the shape (out of balance).

This may cause parts of the cutting tool to come off and hit the operator or bystanders at high speed and result in serious or fatal injuries.

When using mowing heads

Equip the standard deflector with the additional component specified in the instruction manual.

Use only the deflector with properly mounted line limiter blade to ensure that the mowing lines are automatically trimmed to the approved length.

To reduce the risk of injury, always turn off the engine before adjusting manually adjustable mowing heads.

Using the unit with over-long nylon cutting lines increases the load on the engine and reduces its operating speed. This causes the clutch to slip continuously and results in overheating and damage to important components (e.g. clutch, polymer housing components). There is also a **risk of injury** from the cutting tool rotating while the engine is idling.

When using metal cutting tools

Sharpen metal cutting tools regularly as specified. Dull or improperly sharpened cutting edges can put a higher load on the cutting tool and increase the risk of it cracking or shattering.

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

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

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

Use only high-quality replacement parts, in order to avoid the risk of accidents or damage to the machine. Contact a dealer if in doubt.

STIHL recommends the use of genuine STIHL spare parts. Such parts have been optimized for the machine and the user's requirements.

Before starting any maintenance or repair work and before cleaning the machine, always **stop the engine and disconnect the spark plug boot** to avoid all **risk of injury** if the engine starts up inadvertently. – Exception: adjustment of carburetor and idle speed.

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

Check fuel cap regularly for tightness.

Use only the spark plugs approved by STIHL – see Specifications.

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

To reduce the **risk of fire** due to ignition outside the cylinder, move the slide control / stop switch to **STOP** or **0** before turning the engine over on the starter with the spark plug boot removed or the spark plug unscrewed.

Check that the muffler is in perfect working condition.

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

Do not touch the hot muffler – **risk of burns!**

The condition of the anti-vibration buffers influences the machine's vibrations – they must be examined regularly.

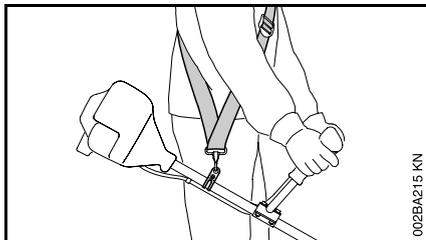
Symbols on Deflectors

Direction of rotation of cutting tool is indicated by an arrow on the deflector.



Deflector for mowing heads and grass cutting blades only. Do not use with circular saw blades or brush knives.

Harness / Shoulder Strap*

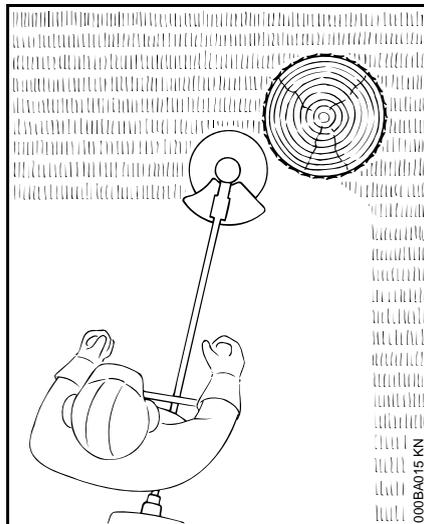


- Use a harness.
- With the engine running, attach the machine to the harness.

Grass cutting blades and brush knives must always be used in combination with a shoulder strap.

Circular saw blades must always be used in combination with a quick-release full harness.

Mowing Head with Nylon Line

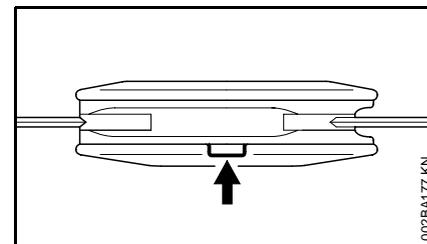


Nylon line achieves a soft cut for edging and trimming around fence posts, trees, etc. – less risk of damaging tree bark.

⚠ To reduce the **risk of injury**, **never** use steel wire in place of the nylon cutting line.

STIHL PolyCut Cutting Head with Plastic Blades

The PolyCut is used for edging fields not bordered by posts, fences, trees or other obstacles.



Check wear limit marks!

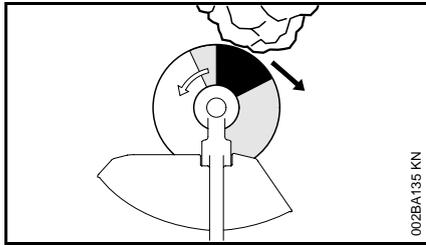
If one of the marks on the PolyCut is worn through (arrow): To reduce the **risk of injury** from thrown parts, **stop using the head immediately**. Install a new one.

It is important to follow the maintenance instructions for the PolyCut cutting head!

* see "Guide to Using this Manual"

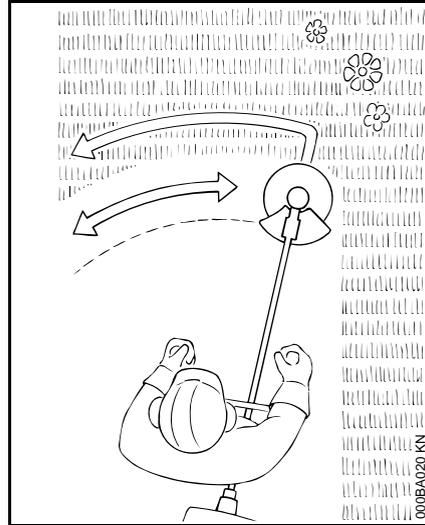
Risk of Kickout (Blade Thrust) with Metal Cutting Blades

When using metal cutting tools (grass cutting blade, brush knife, shredder blade, circular saw blade) there is a risk of kickout when the shaded area of the rotating blade comes into contact with a solid object like a tree trunk, branch, tree stump, rock or similar. The machine is thrown to the right or to the rear.



The **risk of kickout is greatest** when the **black area** of the rotating blade comes into contact with a solid object.

Grass Cutting Blade



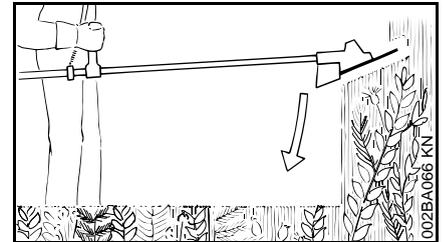
Use for cutting grass and weeds only. Sweep the brushcutter in an arc like a scythe.

Warning! Improper use may damage the grass cutting blade – **risk of injury** from thrown parts.

Resharpener the cutting blade according to instructions when it has dulled noticeably.

Brush Knife

Suitable for cutting matted grass, wild growth and scrub, thinning young stands with a maximum stem diameter of 2 cm. To reduce the **risk of personal injury**, never attempt to cut thicker wood.



To cut wild growth and scrub, lower the **brush knife down** onto the growth to achieve shredding effect – do not use the cutting tool above waist height.

Exercise **extreme caution** when using this method of cutting. The higher the cutting tool is off the ground, the greater the risk of cuttings being thrown sideways and causing injury.

Use the brushcutter like a scythe (sweep it to the right and left) at ground level when cutting grass and thinning young stands.

Warning! Improper use of a brush knife may cause it to crack, chip or shatter. Thrown parts may injure the operator or bystanders.

To reduce the risk of personal injury it is essential to take the following precautions:

- Avoid contact with stones, rocks, pieces of metal and other solid foreign objects.
- Never cut wood or shrubs with a stem diameter of more than 2 cm.
- Inspect the brush knife at regular short intervals for signs of damage. Do not continue working with a damaged brush knife
- Resharpener the brush knife regularly (when it has dulled noticeably) and have it balanced if necessary (by servicing dealer).

Circular Saw Blade

For cutting shrubs and trees:

Up to a stem diameter of 4 cm when used on brushcutters.

Up to a stem diameter of 7 cm when used on clearing saws.

Before starting the cut, accelerate the engine up to full throttle. Perform cut with uniform pressure.

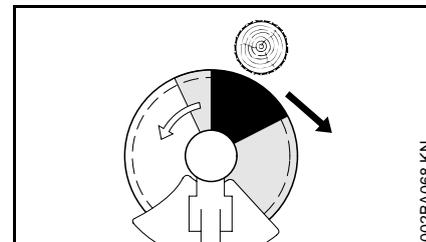
Use circular saw blades only with a matching limit stop of the correct diameter.

! To reduce the risk of blade damage, avoid contact with stones and the ground.

Resharpener the blade properly in good time – dull teeth may result in the blade cracking and shattering and causing serious injury.

When felling, maintain a distance of at least two tree lengths from the next felling site.

Risk of kickout



The risk of kickout is highest in the black area area of the blade: Do not use this area of the circular saw blade for cutting.

There is also a risk of kickout when using the lighter shaded areas of the blade: These areas of the blade should only be used by experienced operators with specialized training.

To reduce the risk of kickout, always start the cut using the non-shaded area of the the circular saw blade.

Approved Combinations of Cutting Tool, Deflector, Handle and Harness

Cutting tools

- 1 STIHL Supercut 20-2 mowing head
- 2 STIHL Autocut 25-2 mowing head
- 3 STIHL Autocut C 25-2 mowing head
- 4 STIHL Trimcut 30-2 mowing head
- 5 STIHL Polycut 20-3 mowing head
- 6 STIHL FixCut 25-2 mowing head
- 7 Grass cutting blade 230-2
- 8 Grass cutting blade 230-4
- 9 Grass cutting blade 230-8
- 10 Grass cutting blade 250-40 Spezial
- 11 Brush knife 250
- 12 Scratcher tooth circular saw blade 200
- 13 Chisel tooth circular saw blade 200

Grass cutting blades, brush knives and circular saw blades made of any other non-metal material are not permitted.

Deflectors, Limit stop

- 14 Deflector for mowing heads and grass cutting blades
- 15 Deflector **with**
- 16 Skirt and blade for all mowing heads (see "Mounting the deflector")
- 17 Deflector **without** skirt and blade for all metal mowing tools and brush knives
- 18 Limit stop for circular saw blades

Handles

- 19 Loop handle
- 20 Loop handle **with**
- 21 Barrier bar
- 22 Bike handle

Harnesses

- 23 Shoulder strap may be used
- 24 Shoulder strap must be used
- 25 Full harness may be used
- 26 Full harness must be used

Equipment

Among other parts, the complete unit includes:

- Cutting tool
- Deflector
- Handle
- Harness

Approved combinations

Select correct combination from the table on the next page on basis of the cutting tool.

 For safety reasons only the tools, deflectors, handles and harnesses shown in each row of the table may be used together. No other combinations are permitted because of the **risk of accidents and personal injury**.

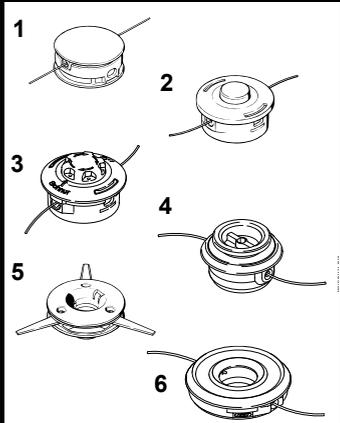
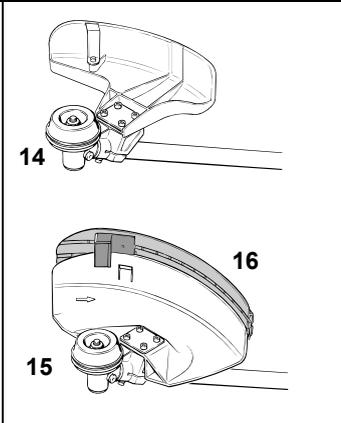
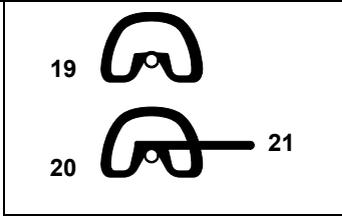
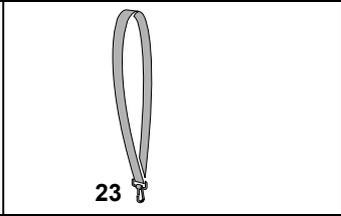
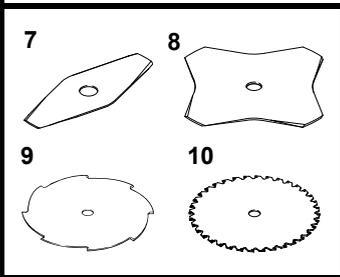
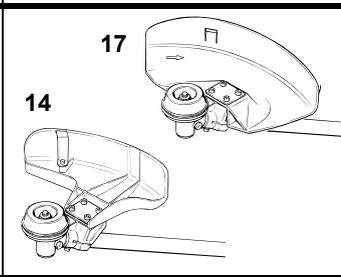
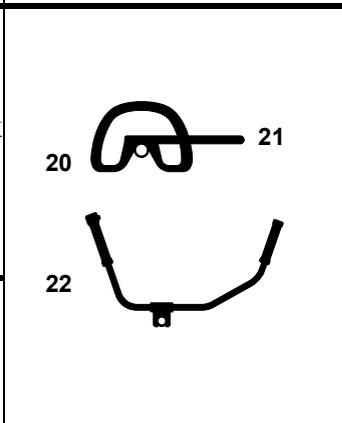
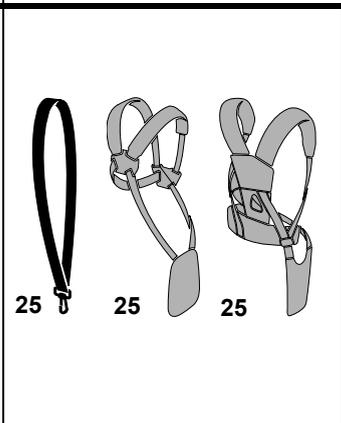
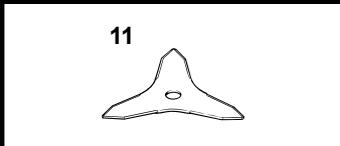
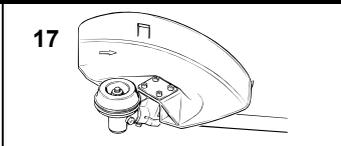
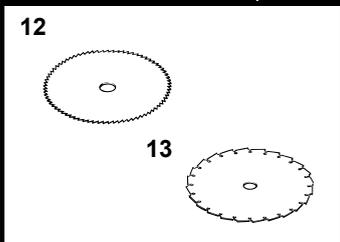
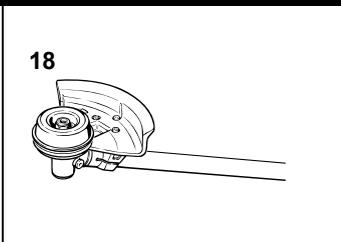
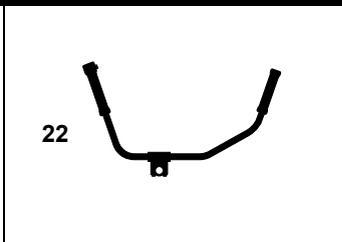
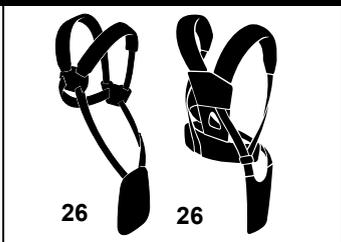
Mowing heads (1, 2, 3, 4, 5 and 6) may only be used on bike handle or loop handle brushcutters.

Grass cutting blades (metal, 7, 8, 9 and 10) may only be used on bike handle brushcutters or loop handle brushcutters **with barrier bar**.

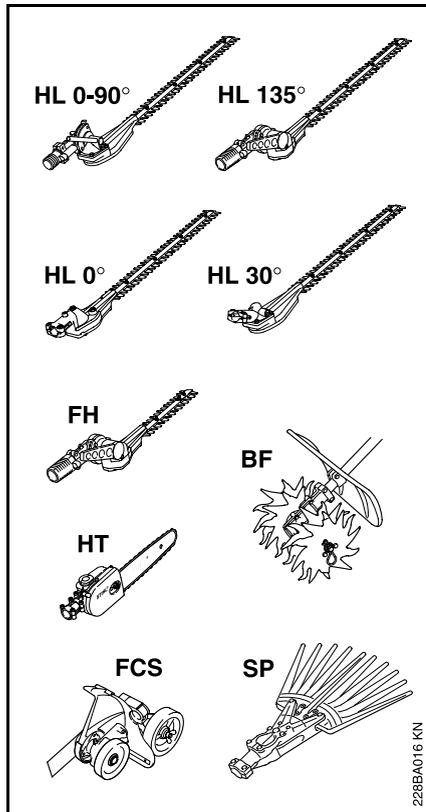
Brush knives (metal; 11) may only be used on bike handle brushcutters or loop handle brushcutters **with barrier bar**.

Circular saw blades (metal; 12 and 13) may only be used on bike handle brushcutters.

 To reduce the **risk of personal injury**, take special care to avoid contact with the rotating cutting tool.

Cutting tool	Deflectors, Limit stop	Handle	Harness / Strap
 <p>1 2 3 4 5 6</p>	 <p>14 15 16</p>	 <p>19 20 21</p>	 <p>23</p>
 <p>7 8 9 10</p>	 <p>14 17</p>	 <p>20 22</p>	 <p>25 25 25</p>
 <p>11</p>	 <p>17</p>		
 <p>12 13</p>	 <p>18</p>	 <p>22</p>	 <p>26 26</p>

Approved Power Tool Attachments



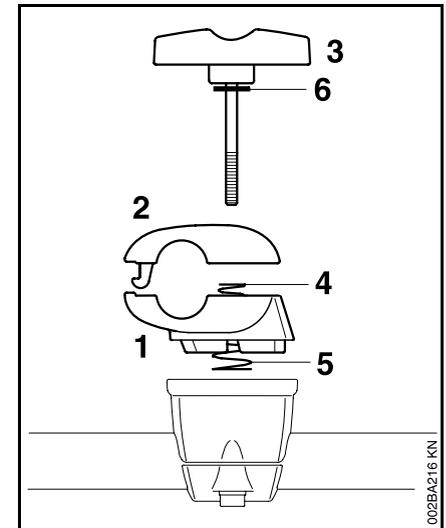
STIHL power tool attachments are available for converting the single purpose FS unit into other power tool combinations.

Your brushcutter is therefore the **basic power unit** for a number of different attachments with a broad range of applications.

Attachment	Application
BF ¹⁾	Cultivator
FCS ³⁾⁴⁾	Power Edger
FH ¹⁾	Power Scythe
HL 0° ²⁾	Hedge Trimmer
HL 30° ¹⁾³⁾	Hedge Trimmer
HL 0-90° ¹⁾³⁾	Hedge Trimmer (adjustable)
HL 135° ¹⁾³⁾	Hedge Trimmer (adjustable)
HT ²⁾	Pole Pruner
SP ²⁾⁵⁾	Special Harvester

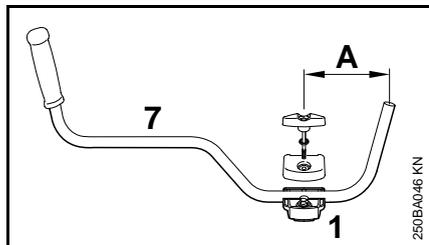
- 1) **Barrier bar** must be fitted on loop handle
- 2) Unsuitable for models with bike handle
- 3) Limited suitability for models with bike handle
- 4) It is not necessary to use a shoulder strap
- 5) Use the handle hose supplied with the machine

Mounting the Bike Handle



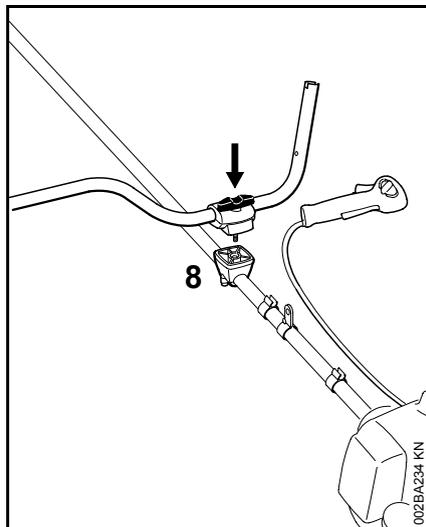
Removing Clamp Moldings

- Hold the lower clamp (1) and upper clamp (2) firmly.
- Release the wing screw (3).
- 💡 The clamps are loose once the wing screw has been released. They are pushed apart by the two springs (4 and 5).
- Pull out the wing screw.
- 💡 Washer (6) remain at the tommy screw .
- Separate the clamps.
- 💡 Springs (4) and (5) remain in the lower clamp.

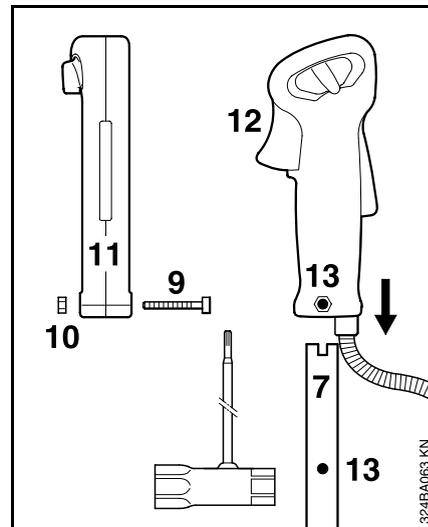


Mounting the Handlebar

- Place the handlebar (7) in the lower clamp (1) so that distance **A** is no more than 6 in (15 cm).
- Place the upper clamp in position and hold both clamps together.
- Push the wing screw, **with washer**, through the two clamps as far as stop – hold all parts together and secure them.



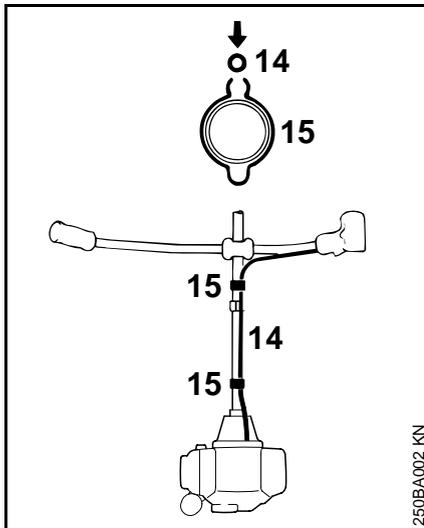
- Place the secured assembly on the handle support (8) with the wing screw at the engine side.
- Push the wing screw into the handle support as far as stop and then screw it down – but do not finally tighten yet.
- Line up the handlebar at a right angle to the drive tube – check dimension **A** again.
- Tighten down the wing screw firmly



Mounting the Control Handle

- Loosen the screw (9). The nut (10) remains in the control handle (11).
- Push the control handle – throttle trigger (12) must point toward the gearbox – onto the handlebar (7) so that the holes (13) line up.
- Insert screw and tighten down firmly.

Mounting the Loop Handle



Fitting the Throttle Cable

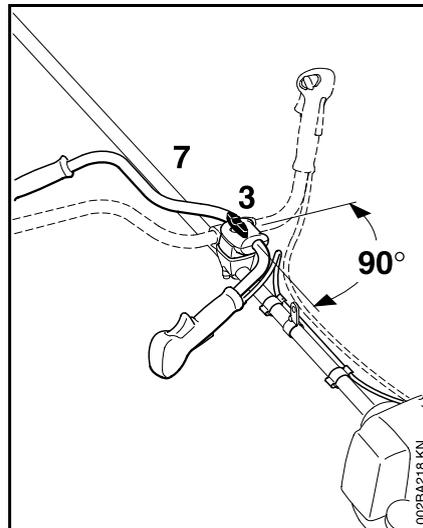
 Do not kink the throttle cable or lay it in tight radii – make sure the throttle trigger moves freely.

- Press the throttle cable (14) into the retainers (15).

Throttle Cable Adjustment

On control handles with slide:

- Go to chapter "Adjusting the Throttle Cable".



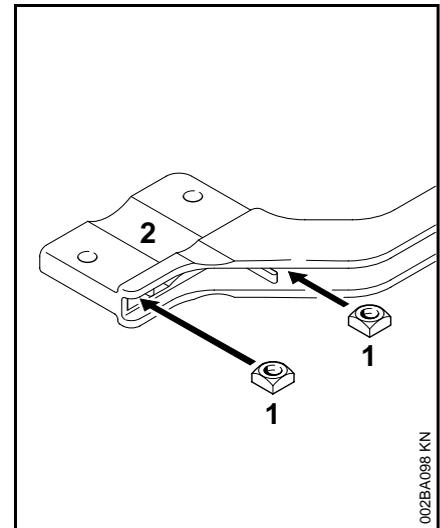
Swiveling the Handlebar

Transport position:

- Release the wing screw (3) and unscrew it until the handlebar (7) can be turned clockwise.
- Turn the handlebar 90° and then swing the handles down.
- Tighten down the wing screw firmly.

Working position:

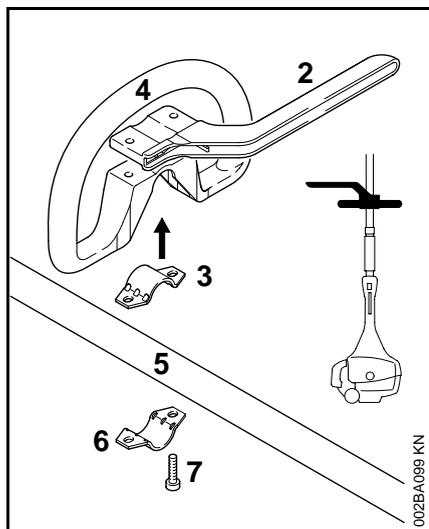
- Reverse the sequence described above to swing the handles up and turn the handlebar counter-clockwise.



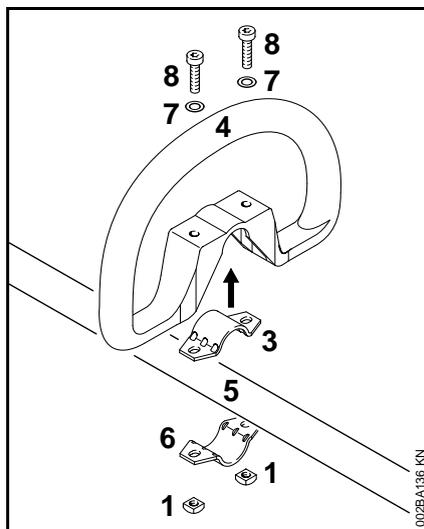
Loop Handle with Barrier Bar

- Insert square nuts (1) in the barrier bar (2).
- Line up the holes.

* see "Guide to Using this Manual"

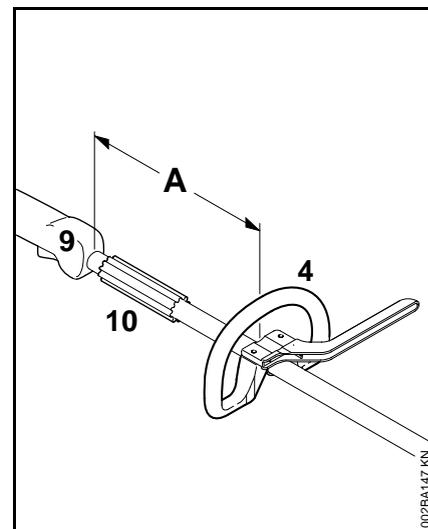


- Place the clamp (3) in the loop handle (4) and position them both against the drive tube (5).
- Fit the clamp (6) and place the barrier bar (2) in position.
- Note correct position!
- Line up the holes.
- Insert screws (7) in holes and screw them into the barrier bar as far as stop.
- Go to “Securing the loop handle”.



Loop Handle without Barrier Bar

- Place the clamp (3) in the loop handle (4) and position them both against the drive tube (5).
- Fit the clamp (6) and line up the holes.
- Fit washers (7) on screws (8) and insert screws in holes. Screw on the square nuts (1) as far as stop.
- Go to “Securing the Loop Handle”.



Securing the Loop Handle

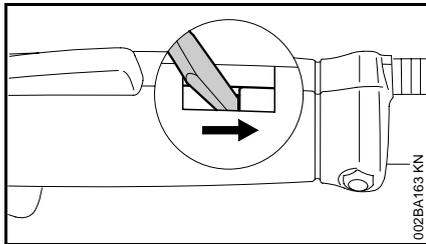
- Secure the loop handle (4) approx. 8 in (20 cm) (A) forward of the control handle (9).
- Line up the loop handle.
- Tighten down the screws firmly – lock the nuts if necessary.
- The sleeve (10) is country-specific and must be located between the loop handle and control handle.

Adjusting the Throttle Cable

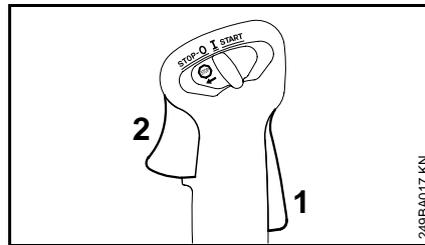
Some machine versions are equipped with a throttle cable adjuster in the control handle.

💡 A properly adjusted throttle cable is the precondition for correct operation in the full throttle, starting throttle and idle positions.

Adjust the throttle cable only after the unit is fully assembled – the control handle must be in the normal operating position.

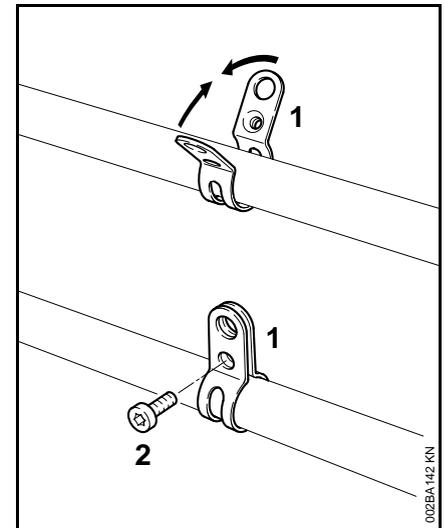


- Use a suitable tool to push the slide to the bottom of the slot (see illustration).



- Press down the trigger interlock (1) and squeeze the throttle trigger (2) (full throttle) – this sets the throttle cable correctly.

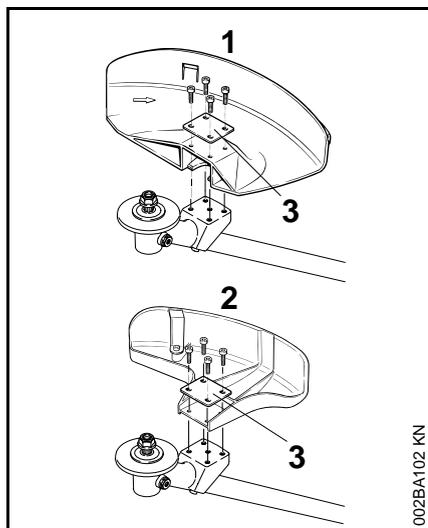
Fitting the Carrying Eye



- For position of carrying eye¹⁾ see "Parts and Controls"
- Place the clamp (1) **with the tapped hole on the left-hand side** of the drive tube.
- Squeeze the two ends of the clamp together and hold in that position.
- Insert M 6 x 14 screw (2).
- Line up the carrying eye.
- Tighten down the screw firmly.

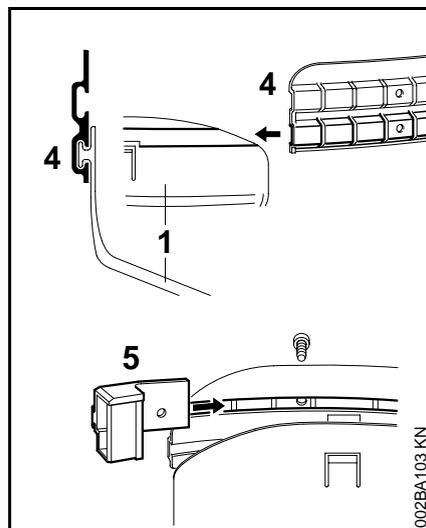
1) Included as standard or available as special accessory

Mounting the Deflector



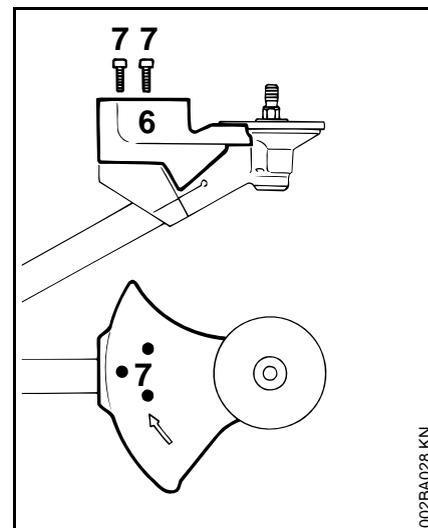
Mounting the deflector

- 1 = Deflector approved for all cutting tools**
- 2 = Deflector approved for use with mowing heads and grass cutting blades only**
- Place the deflector on the gearhead.
 - Fit the plate (3) and line it up.
 - Insert M 5 x 18 screws and tighten down firmly.



Fitting skirt and blade

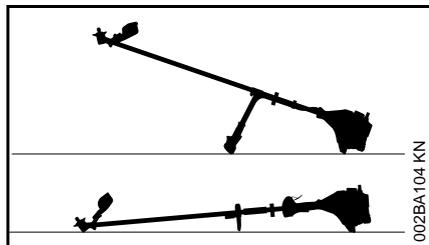
- ⚠** These parts must be fitted to the deflector (1) when you use a mowing head:
- Slide the **lower** guide slot of the skirt (4) onto the deflector (1) – it must snap into position.
 - Push the blade (5) into the **upper** guide slot on the skirt and line it up with the first hole.
 - Fit the screw and tighten it down firmly.



Mounting the stop

- Always fit stop (6) when you use a circular saw blade.
- Place the stop on the gearhead flange.
- Fit the three M 5 x 18 screws (7) and tighten down securely.

Mounting the Cutting Tools



Preparations

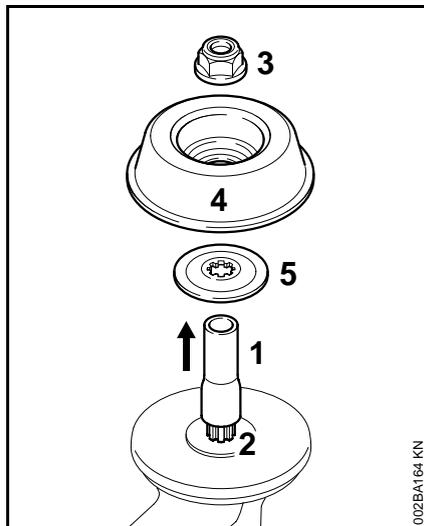
- Lay your brushcutter on its back with the gearhead facing upward.

Mounting Hardware for Cutting Tools

The mounting hardware supplied depends on the cutting tool that comes as original equipment with the new brushcutter.

Mounting hardware is not packed with the machine

- 💡 Only mowing heads may be mounted.



- Pull the hose (1) (protector for shipping) off the shaft (2).
- Go to "Mounting the Mowing Head".
- 💡 If you want to mount a metal cutting tool in place of a mowing head, you will need the following additional parts: Nut (3), rider plate (4) and thrust washer (5) (special accessories).

Mounting hardware is packed with the machine

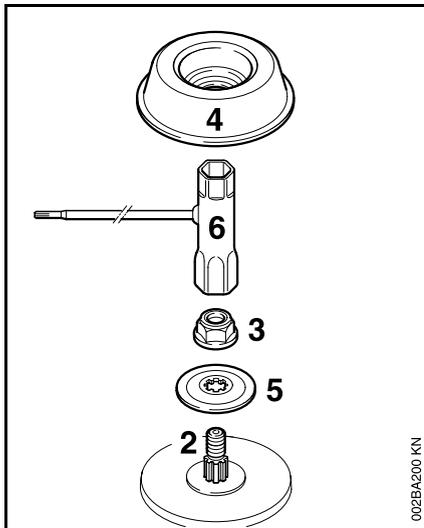
- 💡 Mowing heads and metal cutting tools may be mounted.

Mounting hardware is loose

- Pull the hose (1) (protector for shipping) off the shaft (2).
- 💡 The nut (3), rider plate (4) and thrust washer (5) are in the parts kit supplied with the machine.
- Go to "Mounting the Mowing Head" or "Mounting Metal Cutting Tools".

Mounting hardware is secured to gearhead

- Go to "Removing Mounting Hardware"



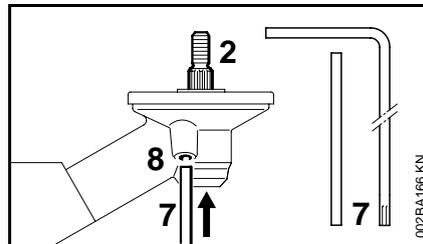
Removing Mounting Hardware

- Block the shaft – see next section on "Blocking the Output Shaft".
- Use the combination wrench (6) (supplied with machine or available as special accessory) to unscrew the nut (3) clockwise (left-hand thread) from the shaft (2).
- Pull the thrust washer (5) off the shaft (2).

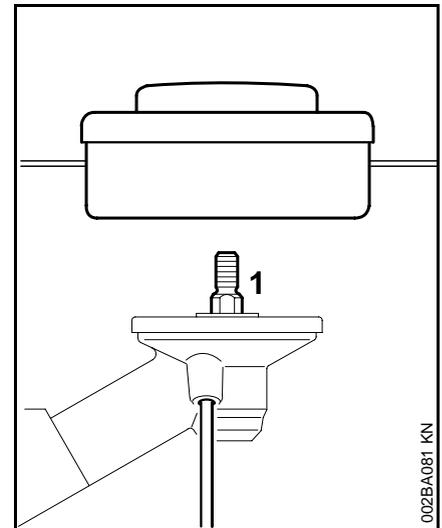
💡 The rider plate (4) is in the parts kit supplied with the machine.

- Go to "Mounting the Mowing Head" or "Mounting Metal Cutting Tools".

Blocking the Output Shaft



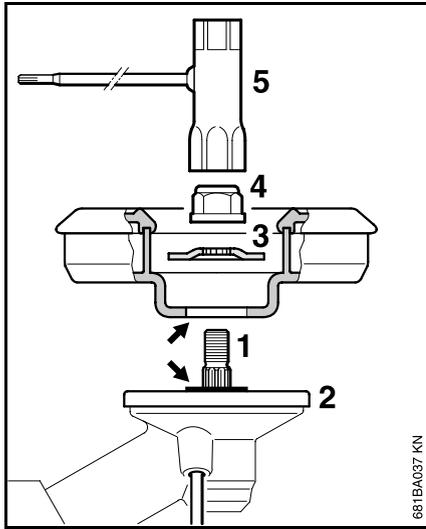
- Insert the stop pin or screwdriver (7) (supplied with machine or available as special accessories) in the hole (8) in the gearhead as far as stop – apply slight pressure.
- Rotate nut or cutting tool on the shaft (2) until the stop pin slips into position and blocks the shaft.



Mounting the mowing head

Keep instruction sheet for mowing head in a safe place.

- Screw the **STIHL SuperCut 20-2**, **STIHL AutoCut 25-2**, **STIHL AutoCut C 25-2**, **STIHL TrimCut 30-2**, **STIHL PolyCut 20-3** counterclockwise onto the shaft (1) as far as stop.
- Block the output shaft.
- Tighten down the mowing head.
- ⚙️ Remove the tool used to block the shaft.



STIHL FixCut 25-2

- Place the mowing head on the thrust plate (2).
- ⚠ Collar (see arrows) must locate in mowing head's mounting hole
Push the thrust washer (3) over the shaft (1) so that it locates against the base.
- Block the output shaft.
- Screw the mounting nut (4) with the combination wrench (5) counterclockwise on to the output shaft and tighten down firmly
- ⚙ Remove the tool used to block the shaft.

Removing the mowing head

- Block the output shaft.

**STIHL SuperCut 20-2,
STIHL AutoCut 25-2,
STIHL AutoCut C 25-2,
STIHL TrimCut 30-2,
STIHL PolyCut 20-3**

- Unscrew the mowing head clockwise.

STIHL FixCut 25-2

- Use the combination wrench to unscrew the mounting nut clockwise from the output shaft

⚠ If the mounting nut is too loose, fit a new one

Adjusting nylon line

STIHL SuperCut

Fresh line is advanced automatically if remaining line is still **min. 6 cm** long. The blade on the deflector trims surplus line to the correct length.

STIHL AutoCut

- Hold the rotating mowing head above the ground – tap it on the ground once – about **3 cm** fresh line is advanced.

The blade on the deflector trims surplus line to the correct length – avoid tapping head more than once at a time.

Line feed operates only if **both** lines still have a minimum length of **2.5 cm**.

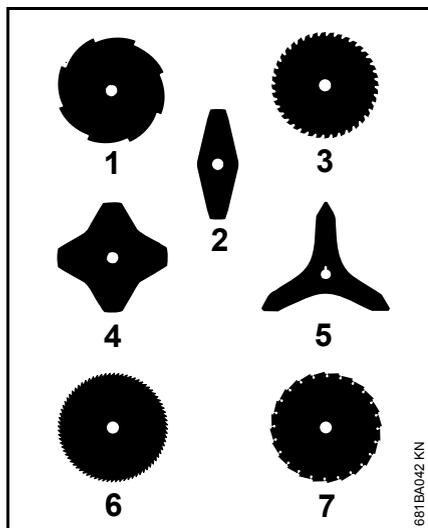
All other mowing heads

Refer to instructions supplied with the mowing head.

⚠ To reduce the risk of injury, always shut off the engine before adjusting the nylon line by hand.

Replacing nylon line or grass cutting blades

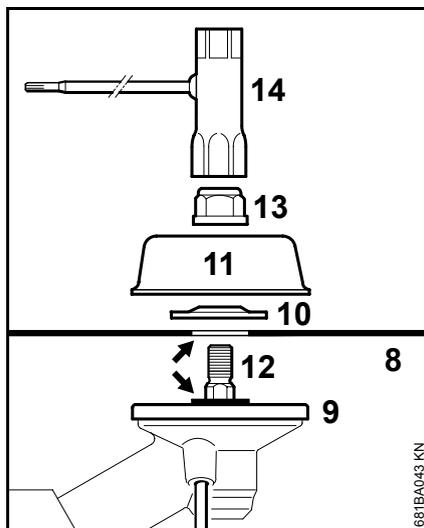
Refer to instructions supplied with the mowing head.



Mounting metal cutting tools

⚠ The **skirt and line limiting blade** are not required for grass cutting blades 230-2 (2), 230-4 (4), 230-8 (1), 250-40 Spezial (3) or the brush knife (5) – see "Mounting the Deflector".

⚠ Fit the appropriate **limit stop** for circular saw blades 200 (6, 7) – see "Mounting the Deflector".



- Lay your brushcutter on its back with the cutting tool mounting face pointing up:
Cutting edges of (2), (4) and (5) may point in either direction.
Cutting edges of (1), (3), (6) and (7) must point clockwise.

⚠ Direction of rotation is marked by arrow on inside of cutting head deflector or limit stop.

- Place the cutting tool (8) on the thrust plate (9).
- ⚠ Collar (see arrows) must locate in cutting tool's mounting hole.
- Slip thrust washer (10) and rider plate (11) over the output shaft (12).
- Block the output shaft.
- Screw the mounting nut (13) on to the output shaft counterclockwise and use the combination wrench (14) to tighten it down firmly.

⚠ If the mounting nut is too loose, fit a new one.

Removing metal cutting tools

- Block the output shaft.
- Unscrew the nut clockwise.
- Take the parts off the shaft – but **do not** remove the thrust plate (9).

4-MIX Engine

The **STIHL 4-MIX engine** features gas oil lubrication and must be run on a **fuel mixture** of gasoline and engine oil.

It operates otherwise on the 4-stroke principle.

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.

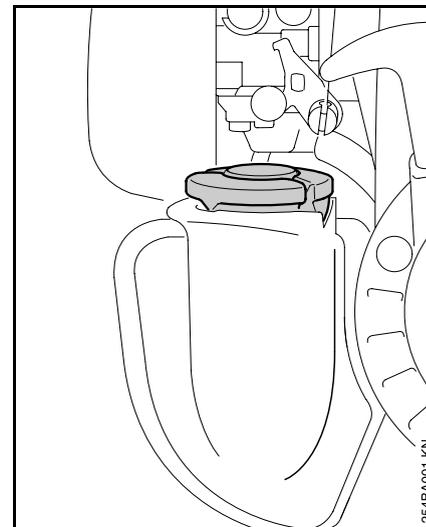
Engine Oil

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.

Fueling



- 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 fueling and do not overfill the tank. STIHL recommends use of the STIHL filling system (special accessory).

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.

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.

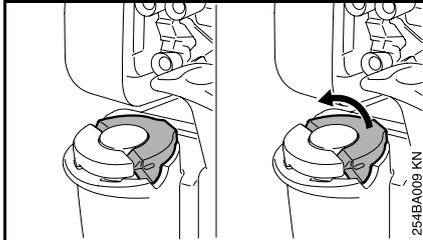
 Pressure may build up in the canister – open it carefully.

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

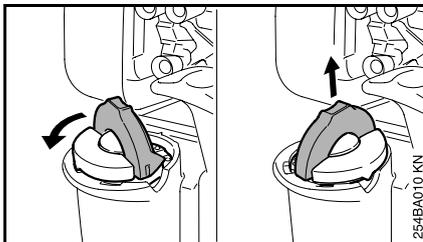
 Dispose of remaining fuel and cleaning fluid properly in accordance with local regulations and environment requirements.

Fitting the Harness

Opening the cap

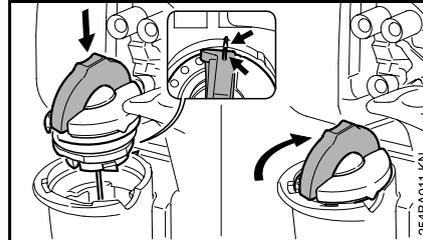


- Raise the grip to the upright position.

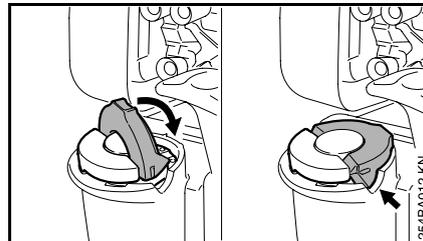


- Rotate the cap about 1/4 turn counterclockwise.
- Remove the cap.

Closing the cap

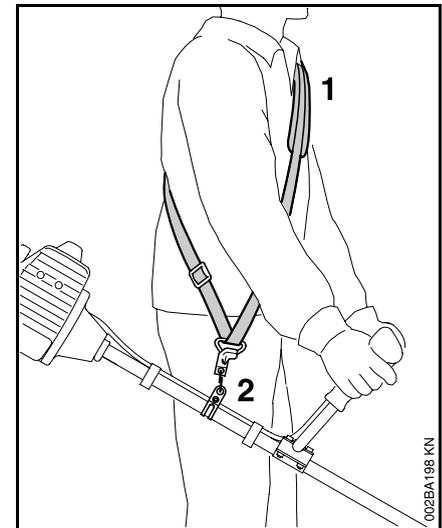


- With the grip upright, insert the cap in the fuel tank opening so that the marks line up.
- Rotate the cap clockwise as far as stop (about 1/4 turn).



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

If the grip does not lie completely flat on the cap and the grip's lug does not engage the recess (see arrow), the cap is not properly closed. You must repeat the above steps.



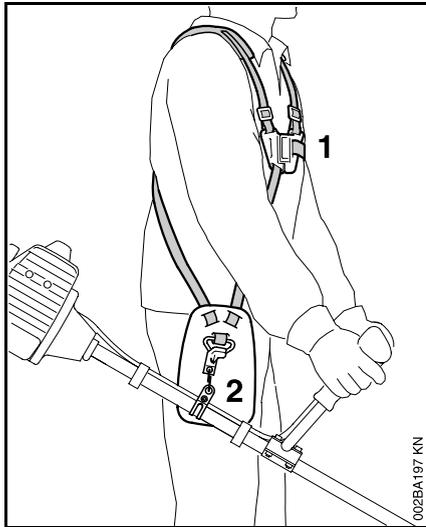
The type and style of harness depend on the market.

Shoulder Strap

- Put on the shoulder strap (1).
- Adjust the length of the strap so that the spring hook (2) is about a hand's width below your right hip.
- Balance the brushcutter.

The use of the harness is described in chapter "Approved Combinations of Cutting Tool, Deflector, Handle and Harness".

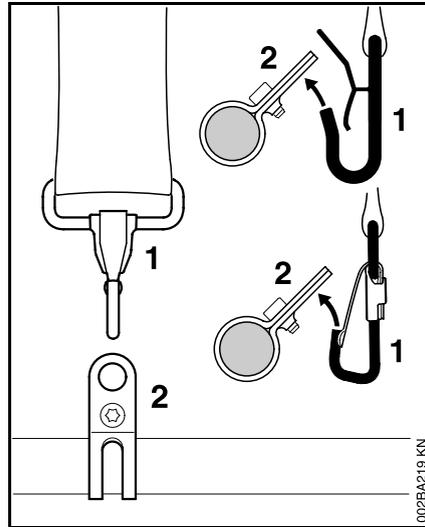
Balancing the Brushcutter



Full harness

- Put on the full harness (1).
- Adjust length until the spring hook (2) is about a hand's width below your right hip.
- Balance the brushcutter.

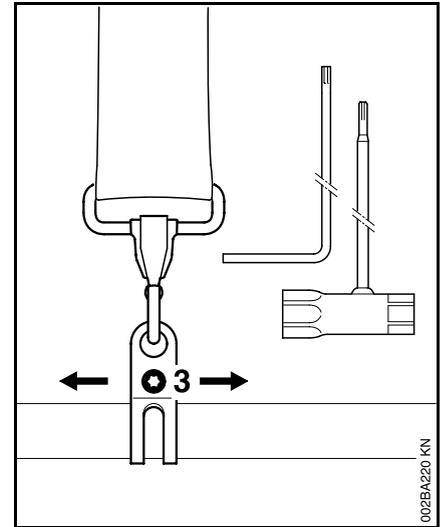
The use of the harness is described in chapter "Approved Combinations of Cutting Tool, Deflector, Handle and Harness".



The type and style of harness and carabiner (spring hook) depend on the market.

Attaching the Unit to the Shoulder Strap

- Attach the spring hook (1) to the carrying ring (2) on the drive tube.



- Loosen the screw (3).

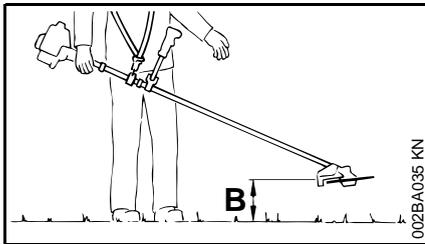
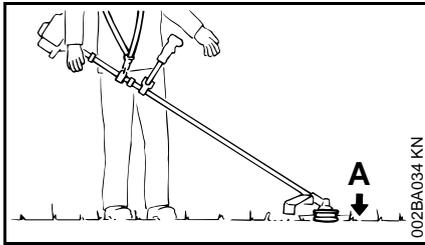
Balancing the Unit

The unit is balanced differently, depending on the cutting tool used.

Proceed as follows until the conditions specified under "Floating positions" have been met:

- Adjust the carrying ring – tighten the screw moderately – let the unit go until it is balanced – then check the floating position.

Starting / Stopping the Engine



Floating positions

A Mowing tools

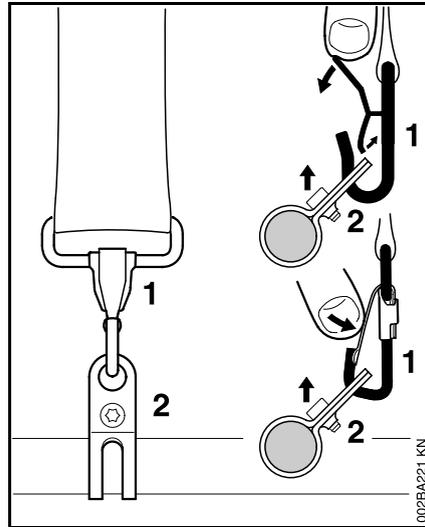
Mowing heads, grass cutting blades and brush knife should just touch the ground.

B Circular saw blades

should "hover" about 8" (20 cm) above the ground.

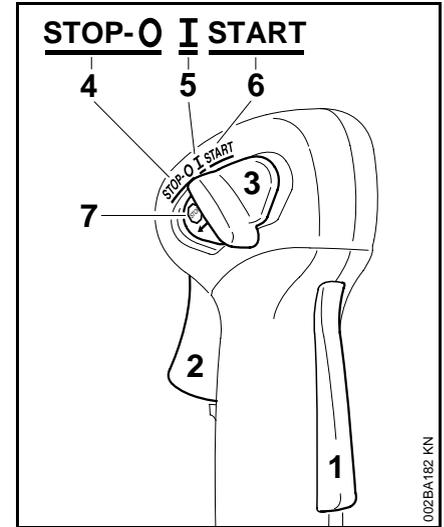
When the correct floating position has been reached:

- Tighten down the screw on the carrying ring.



Detaching the Unit from the Shoulder Strap

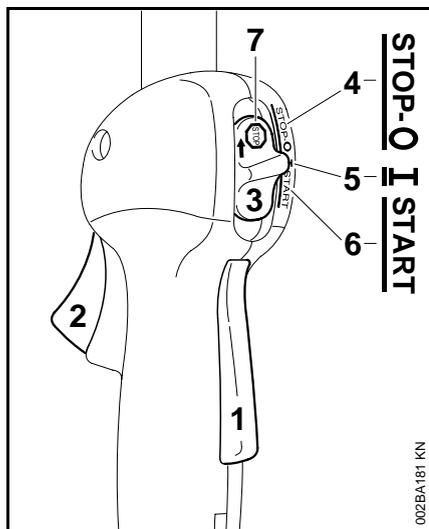
- Press the bar on the spring hook (1) and pull the carrying ring (2) out of the hook.



Controls

Control handle on bike handle

- Throttle trigger interlock (1)
- Throttle trigger (2)
- Slide control (3)



Control handle on drive tube

Throttle trigger interlock (1)

Throttle trigger (2)

Slide control (3)

Positions of slide control

STOP-O (4) – engine off – the ignition is switched off

I – normal run position (5) – the engine is running or can start

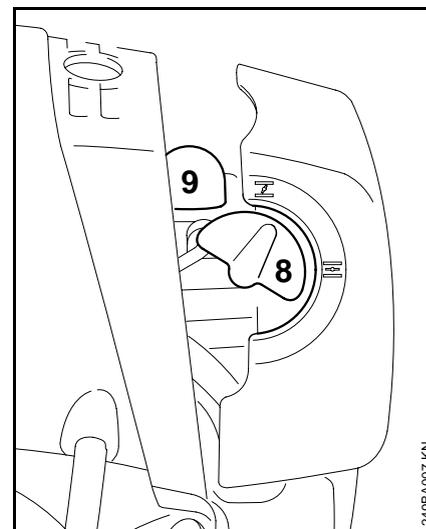
START (6) - the ignition is switched on, the engine can start

Symbol on slide control

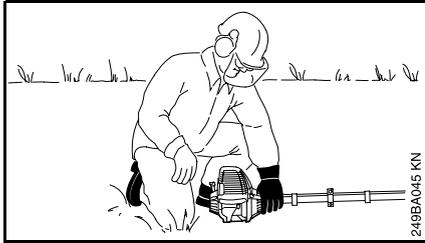
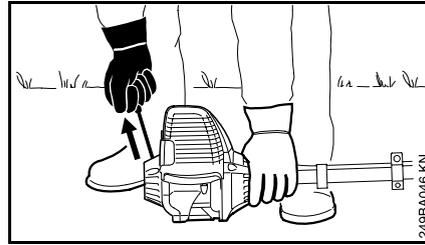
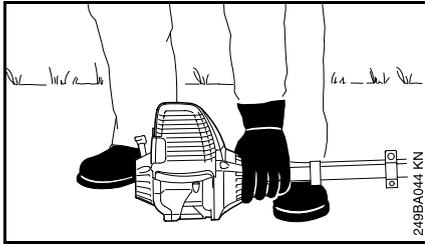
☹ (7) – stop symbol and arrow – to stop the engine, push the slide control in direction of arrow on stop symbol (☹) to **STOP-O**.

Starting

- Hold down the throttle trigger interlock and squeeze the throttle trigger.
- While holding both levers in this position
- move the slide control to **START** and hold it there.
- Now release the throttle trigger, slide control and trigger interlock in that order. This is the **starting throttle position**.



- Set the choke knob (8):
For cold start to I
For warm start to II
 even if engine has been running but is still cold
- Press fuel pump bulb (9) at least five times – even if the bulb is already filled with fuel.



- Place the unit on the ground: It must rest securely on the engine support and deflector. Check that the cutting tool is not touching the ground or any other obstacles.
 - Make sure you have a firm footing.
 - Hold the unit with your left hand and press it down **firmly** – your thumb should be under the fan housing.
-  Do not stand or kneel on the drive tube!

- Pull the starter grip slowly with your right hand until you feel it engage and then give it a brisk strong pull. Do not pull out the starter rope to full length – it might otherwise break.
- Do not let the starter grip snap back. Guide it slowly back into the housing so that the starter rope can rewind properly.

- Crank engine until it begins to fire. After no more than **five attempts**, turn the choke knob to .
 - continue cranking.
- When the engine begins to fire:**
- Blip the throttle trigger so that the slide control moves to the normal run position **I** and the engine settles down to idle speed.
-  Make sure the carburetor is correctly adjusted – the cutting tool must not rotate when the engine is idling.

Your machine is now ready for operation.

Stopping the engine

- Move the slide control in direction of arrow () to **STOP-O**.

At very low outside temperatures

- As soon as engine runs:
- Blip the throttle trigger to disengage the starting throttle position. The slide control moves to the normal run position **I** and the engine settles down to idle speed.
 - Open the throttle slightly.
 - Warm up engine for brief period.

Operating Instructions

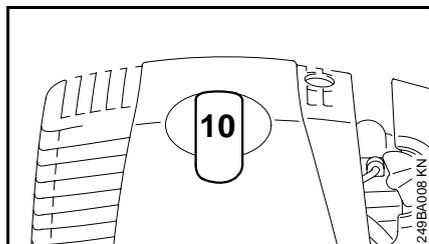
If the engine does not start

Choke knob

If you did not turn the choke knob to  quickly enough after the engine began to fire, the combustion chamber has flooded.

- Turn choke knob to 
- Select starting throttle position.
- Start the engine by pulling the starter rope firmly. 10 to 20 pulls may be necessary.

If the engine still does not start:



- Move the slide control to **STOP-O**.
- Pull off the spark plug boot (**10**).

- Unscrew and dry off the spark plug.
- Open the throttle wide.
- Crank the engine several times with the starter to clear the combustion chamber.
- Refit the spark plug. Connect the spark plug boot (press it down firmly).
- Move the slide control to **START**.
- Set the choke knob to  – even if engine is cold.
- Now start the engine.

Throttle cable adjustment

- Check adjustment of throttle cable – see "Adjusting the Throttle Cable".

Tank run until dry

- After refueling, press the fuel pump bulb at least five times – even if bulb is filled with fuel.
- Set choke knob according to engine temperature.
- Now start the engine.

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.

During operation

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

After finishing work

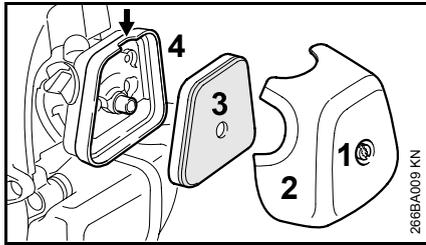
Storing for short period:

Wait for engine to cool down. Drain the fuel tank and keep the unit in a dry place, away from sources of ignition, until you need it again.

Storing for a long period:

see chapter "Storing the Machine".

Cleaning the Air Filter

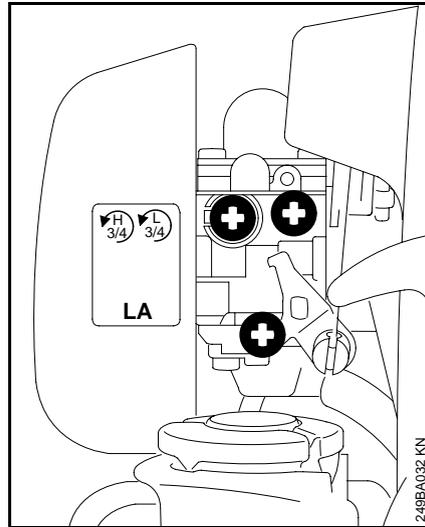


Dirty air filters reduce engine power, increase fuel consumption and make starting more difficult.

If there is a noticeable loss of engine power:

- Set the choke knob to \overline{I} .
- Take out the screw (1) and remove the filter cover (2).
- Clean away loose dirt from around the filter.
- Grip the filter element (3) at the notch (arrow) in the filter housing (4) and take it out.
- Fit a new filter element. As a temporary measure you can knock it out on the palm of your hand or blow it out. **Do not wash.**
- Replace any damaged parts.
- Install filter element in the filter housing.
- Refit the filter cover.
- Insert the screw and tighten it down firmly.

Adjusting the Carburetor



The carburetor comes from the factory with a standard setting.

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

With this carburetor it is only possible to adjust the engine idle speed within fine limits.

Standard Setting

- Shut off the engine.
- Mount cutting tool or attachment.
- Check the air filter – clean or replace if necessary.
- Check adjustment of the throttle cable and readjust if necessary – see "Adjusting the Throttle Cable".
- Check the spark arresting screen (not installed in all countries) and clean or replace if necessary.
- Carefully screw both adjusting screws clockwise down onto their seats.
- Open high speed screw (H) $\frac{3}{4}$ turn.
- Open low speed screw (L) $\frac{3}{4}$ turn.
- Start and warm up the engine
- Adjust idle speed with the idle speed screw (LA) so that the tool does not rotate.

Fine Tuning

A slight correction of the setting of the high speed screw **(H)** may be necessary if engine power is not satisfactory when operating at high altitude or at sea level or after changing the tool.

Rule of thumb

- Turn high speed screw **(H)** about a quarter turn for every 1000m (3300 ft) change in altitude.
- Carry out standard setting.
- Warm up engine for about 3 minutes.
- Open the throttle wide

At high altitude

- Turn high speed screw **(H)** clockwise (leaner) no further than stop until there is no noticeable increase in engine speed.

At sea level

- Turn high speed screw **(H)** counterclockwise (richer) no further than stop until there is no noticeable increase in engine speed.

 It is possible that maximum engine speed may be reached with the standard setting in each case.

Adjusting Idle Speed

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

- Warm up the engine for about 3 minutes.

Engine stops while idling

- Turn idle speed screw **(LA)** slowly clockwise until the engine runs smoothly – the tool must not rotate.

Cutting tool rotates when engine is idling

- Turn idle speed screw **(LA)** slowly counterclockwise until the tool stops rotating and then turn the screw about another $1/2$ to $3/4$ turn in the same direction.

Erratic idling behavior, engine stops even though setting of LA screw is correct, poor acceleration

Idle setting too lean:

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

Erratic idling behavior

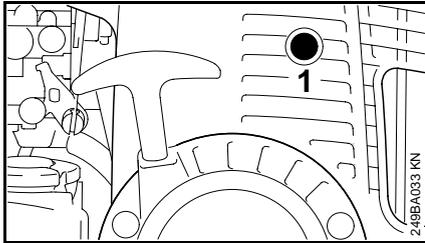
Idle setting too rich:

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

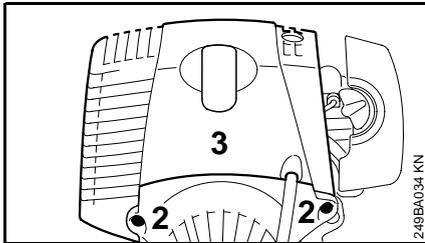
Spark Arresting Screen in Muffler

The spark arresting screen is an option that is not fitted in all machines.

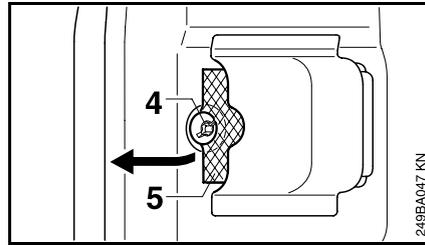
- If the engine is low on power, check the spark arresting screen in the muffler.
- Wait for muffler to cool down.



- Move slide control to **STOP-O**.
- Remove the screw (1).

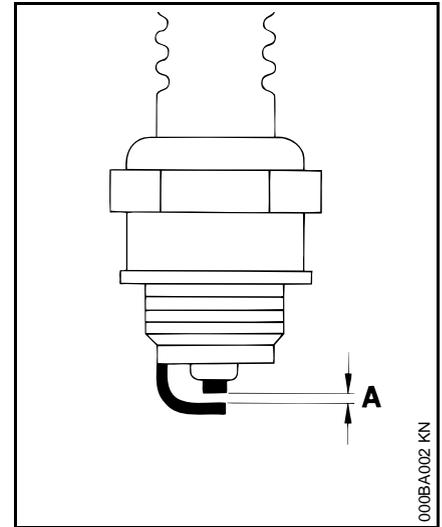


- Remove the screws (2).
- Lift away the shroud (3).



- Remove the screw (4).
- Lift spark arresting screen (5) and pull it out.
- Clean spark arresting screen if necessary – if screen is damaged or coked up, fit a new one.
- Refit the spark arresting screen.
- Insert screw and tighten down.
- Fit the shroud.

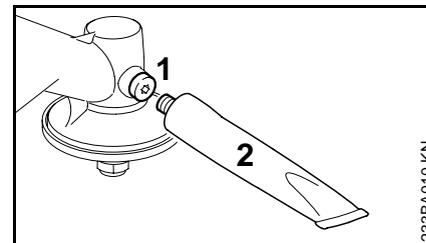
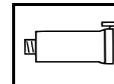
Checking the Spark Plug



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".

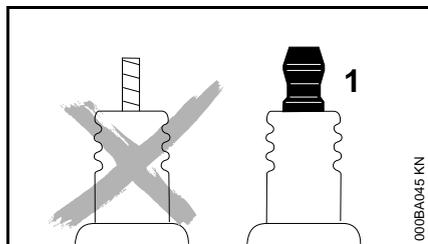
Lubricating the Gearbox



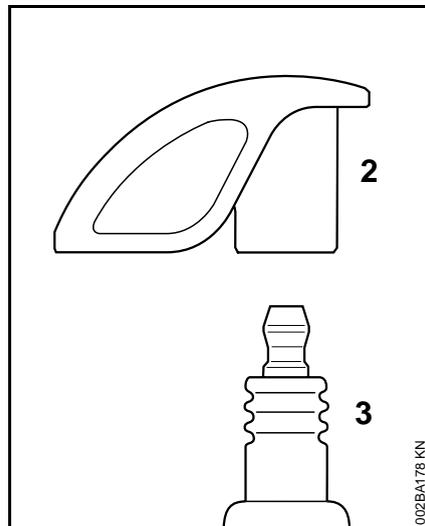
- Check grease level regularly – about every 25 hours of operation.
- Unscrew the filler plug (1).
- If no grease can be seen on the inside of the filler plug, screw the tube (2) of STIHL gear lubricant for brushcutters – see "Special Accessories" – into the filler hole.
- Squeeze up to 5 g grease into the gear housing.
- ⚙️ Do not completely fill the gear housing with grease.
- Refit the filler plug and tighten it down firmly.

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

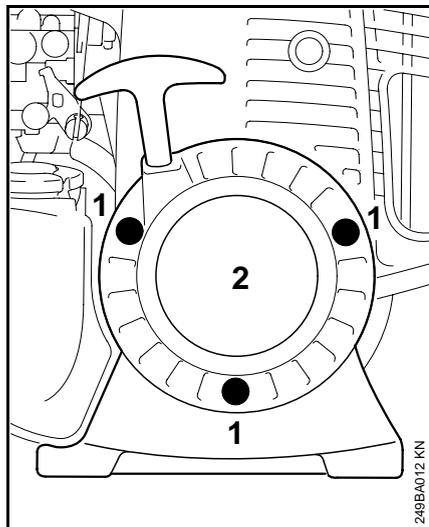


- If the spark plug comes with a detachable adapter nut (1), screw it on **firmly**.



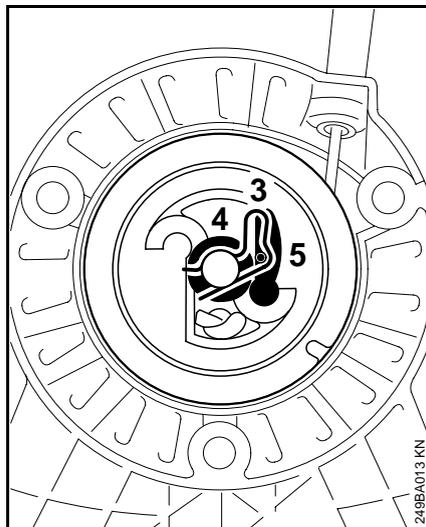
- On all spark plugs:
- Always press the boot (2) **firmly** on to the spark plug (3).

Replacing Starter Rope and Rewind Spring

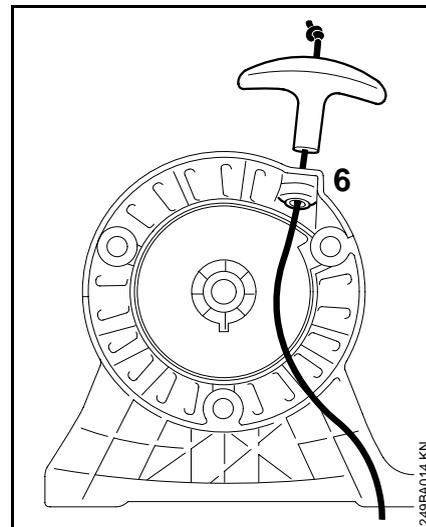


Replacing the starter rope

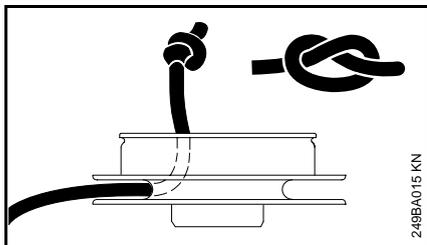
- Move slide control in direction of  – arrow to **STOP-O**.
- Take out the screws (1).
- Lift the starter cover (2) off the housing.



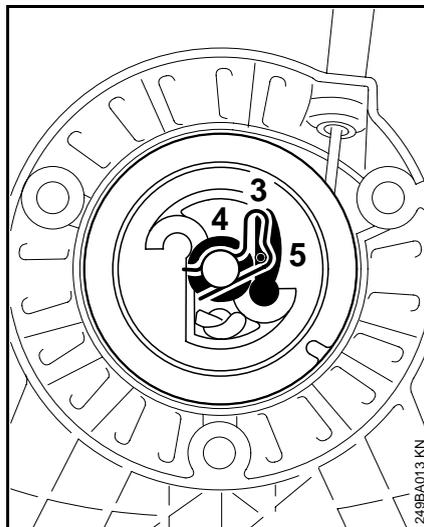
- Remove the spring clip (3).
- Remove the rope rotor with washer (4) and pawl (5).



- Remove remaining rope from the rotor and grip.
- Tie a simple overhand knot in the new rope (see "Specifications") and then thread it through the top of the grip and the rope bushing (6).



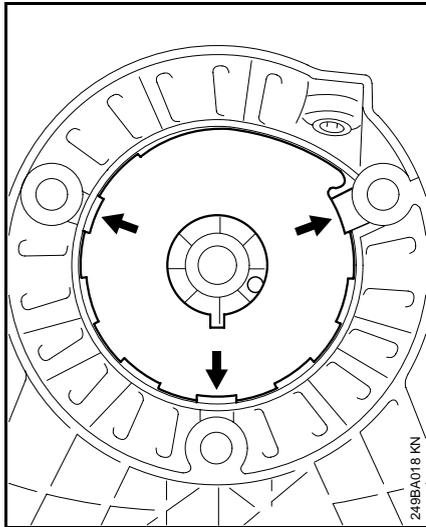
- Thread the rope through the rotor and secure it with a simple overhand knot.
- Coat rope rotor bearing bore with non-resinous oil.
- Slip rotor over starter post – turn it back and forth to engage anchor loop of rewind spring.



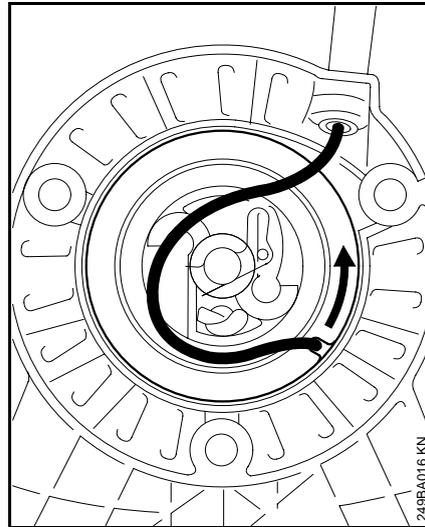
- Refit the pawl (5) in the rotor.
- Fit the washer (4) on the starter post.
- Use a screwdriver or suitable pliers to install spring clip (3) on starter post and engage it on the pawl's peg – the spring clip must point counterclockwise clockwise as shown in the illustration.
- Go to "Tensioning the rewind spring".

Replacing a broken rewind spring

- Remove the rope rotor as described under "Replacing Starter Rope and Rewind Spring".
- ⚠ The bits of spring might still be under tension and could fly apart when you take them out of the housing. To reduce **risk of injury**, wear eye and face protection and work gloves.
- Remove spring housing and the parts of the spring.
- Lubricate the new spring with a few drops of non-resinous oil.



- Place the new spring housing on the recesses (arrows) – bottom plate must face up.
- Push the spring housing into the starter cover.
- Install the rope rotor as described under "Tensioning the rewind spring".
- If the spring pops out of the housing during installation: Refit it in the counterclockwise direction, starting outside and working inward.



Tensioning the rewind spring

- Make a loop in the unwound starter rope and use it to turn the rope rotor six 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.
- Fit the starter cover on the housing.
- Tighten down the screws firmly.

Storing the Machine

For periods of about 3 months or longer

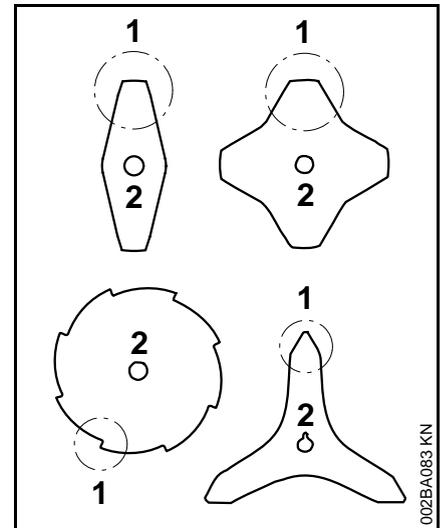
- Drain and clean the fuel tank in a well ventilated area.
- Dispose fuel properly in accordance with local environmental requirements.
- Run engine until carburetor is dry – this helps prevent carburetor diaphragms sticking together.
- Remove, clean and inspect the cutting tool.
- Thoroughly clean the machine – pay special attention to the cylinder fins and air filter.
- Store the machine in a dry, high or locked location – out of the reach of children and other unauthorized persons.

Sharpening Metal Cutting Tools

- Use a file – see “Special Accessories” – to sharpen cutting tools. In case of more serious wear or nicks: Resharpener with a grinder or have work done by STIHL dealer.
- Resharpener frequently, take away as little material as possible – two or three strokes of the file are usually enough.

To avoid out-of-balance

- After resharpener about 5 times, have blade checked on STIHL balancer – see “Special Accessories” – and rebalanced as necessary.



- Resharpener the cutters (1) uniformly – do not alter the contour of the parent blade (2) in any way.

See cutting tool packaging for additional sharpening instructions.

Inspections and Maintenance by Dealer

Fuel pickup body in tank

- Have the pickup body in the fuel tank replaced every year.

STIHL recommends that maintenance and repair work be carried out only by authorized STIHL dealers.

Maintenance Chart

The following maintenance intervals apply for normal operating conditions. If your daily working time is longer than normal or cutting conditions are difficult (very dusty work area, etc.), shorten the specified intervals accordingly.		before starting work	after finishing work or daily	after each refueling stop	weekly	monthly	yearly	if problem	if damaged	as required
Complete machine	Visual inspection (condition, leaks)	X		X						
	Clean		X							
Control handle	Check operation	X		X						
Air filter	Clean							X		X
	Replace								X	
Pick up body in fuel tank	Have checked by servicing dealer ¹⁾							X		
	Have replaced by servicing dealer ¹⁾						X		X	X
Fuel tank	Clean						X			X
Carburetor	Check idle speed	X		X						
	Readjust idle									X
Spark plug	Readjust electrode gap							X		
	Replace after about 100 hours of operation									
Cooling inlets	Inspect		X							
	Clean									X
Valve clearance	Check and adjust if necessary, after about 139 hours of operation ¹⁾									X
Spark arresting screen in muffler ²⁾	Inspect		X					X		
	Replace								X	X
All accessible screws and nuts (not adjusting screws)	Retighten									X

1) STIHL recommends that this work be done by a STIHL servicing dealer

2) not all markets

The following maintenance intervals apply for normal operating conditions. If your daily working time is longer than normal or cutting conditions are difficult (very dusty work area, etc.), shorten the specified intervals accordingly.		before starting work	after finishing work or daily	after each refueling stop	weekly	monthly	yearly	if problem	if damaged	as required
Antivibration elements	Check	X						X		X
	Have replaced by servicing dealer ¹⁾								X	
Cutting tools	Visual inspection	X		X						
	Replace								X	
	Check tightness	X		X						
Metal cutting tools	Sharpen	X								X
Gearbox lubrication	Check				X					
	Replenish									X
Safety labels	Replace								X	

¹⁾ STIHL recommends that this work be done by a STIHL servicing dealer

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 nor 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

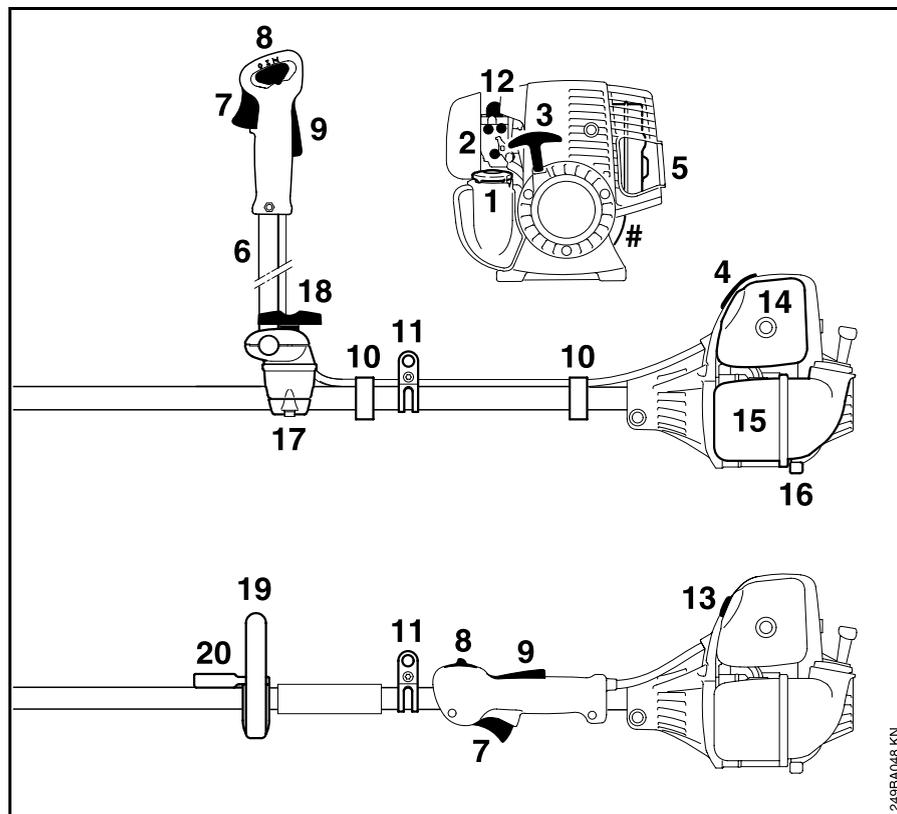
Some parts of the power tool are subject to normal wear and tear even during regular operation in accordance with instructions and, depending on the type and duration of use, have to be replaced in good time.

Among other parts, this includes:

- Cutting tools (all types)
- Mounting hardware for cutting tools (rider plate, nut, etc.)
- Deflectors
- Clutch
- Filters (air, fuel)
- Starter mechanism
- Spark plug
- Components of anti-vibration system

Parts and Controls

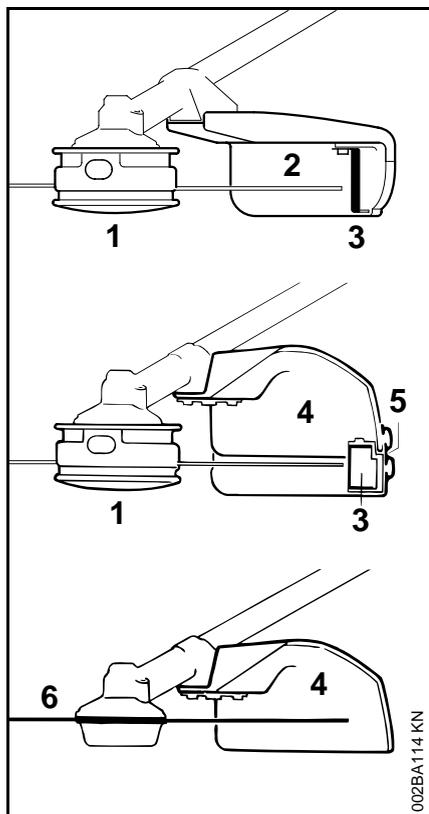
Part 1



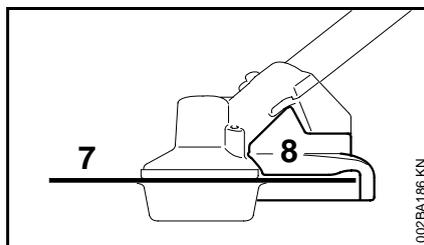
- 1 Fuel filler cap
 - 2 Carburetor adjusting screws
 - 3 Starter grip
 - 4 Spark plug boot
 - 5 Muffler
(with spark arresting screen*)
 - 6 Bike handle
 - 7 Throttle trigger
 - 8 Slide control
 - 9 Throttle trigger interlock
 - 10 Throttle cable retainer
 - 11 Carrying ring (for harness)
 - 12 Fuel pump
 - 13 Choke knob
 - 14 Air filter cover
 - 15 Fuel tank
 - 16 Machine support
 - 17 Handle support
 - 18 Wing screw
 - 19 Loop handle
 - 20 Barrier bar*
- # Serial number

* see "Guide to Using this Manual"

Part 2



- 1 Mowing head
- 2 Deflector (for mowing heads only)
- 3 Line limiting blade
- 4 Deflector with skirt
(for all cutting tools)
- 5 Skirt
- 6 Metal mowing tool



- 7 = Circular Saw Blade
- 8 = Limit Stop
(for circular saw blade only)

Specifications

STIHL Single cylinder four-stroke engine with gasoil lubrication

Displacement: 28.4 cm³

Bore: 38 mm

Stroke: 25 mm

Engine power to ISO 8893:
0.95 kW (1.3 bhp)

Idle speed: 2800 rpm

Engine cutoff speed: 10,500 rpm

Max. output shaft speed
(cutting tool drive): 7,500 rpm

Valve clearance

Inlet valve: 0.10 mm

Exhaust valve: 0.10 mm

Fuel tank capacity

0.53 l

Spark plug (suppressed)

Bosch USR 7AC

– Electrode gap 0.5 mm

Starter rope

3.0 mm dia., 850 mm long

Weight

(dry, without cutting tool and deflector)

FS 90 with bike handle: 5.8 kg

FS 90 R with loop handle: 5.5 kg

Noise and Vibration Data

Model	Cutting tool	Sound pressure level $L_{peq}^{1)}$ to ISO 22868 dB(A)	Sound power level $L_{weq}^{1)}$ to ISO 22868 dB(A)	Vibration measurement $a_{hv,eq}^{1) 5)}$ to ISO 22867	
				Handle left (m/s^2)	right (m/s^2)
FS 90 ²⁾	Mowing head	91	101	4.6	5.4
FS 90 ²⁾	Metal tool	90	99	5.3	6.1
FS 90 R ³⁾	Mowing head	91	101	5.1	5.3
FS 90 R ⁴⁾	Metal tool	90	99	3.5	4.9

Model	Attachment	Sound pressure level $L_{peq}^{1)}$ to ISO 11789, EN ISO 11806, 11680-1, 10517, 11201 dB(A)	Sound power level $L_{weq}^{1)}$ to ISO 11789, 3744, EN ISO 11806, 11680-1, 10517 dB(A)	Vibration measurement $a_{hv,eq}^{1) 5)}$ to ISO 11789, 8662, EN ISO 11806, 11680-1, 10517	
				Handle left (m/s^2)	right (m/s^2)
FS 90 ²⁾	Version: see chapter	< 91	< 103	< 4.9	< 4.0
FS 90 R ³⁾	"Approved Power Tool Attachments"	< 93	< 103	< 6.1	< 6.6

1) Weighted level includes idling and racing with the duration of exposure in the following ratios:

– FCS, FS and HT: 1 : 1; – FH and HL: 1 : 4; – BC, BF and KW: 1 : 6.

2) Version with bike handle

3) Version with loop handle

4) Version with loop handle **and** barrier bar

5) For further details concerning compliance with the employers' directive on vibrations 2002/44/EC see www.stihl.com/vib/

Special Accessories

Cutting Tools

- 1 STIHL SuperCut 20-2
- 2 STIHL AutoCut 25-2
- 3 STIHL AutoCut C 25-2
- 4 STIHL TrimCut 30-2
- 5 STIHL PolyCut 20-3
- 6 STIHL FixCut 25-2
- 7 Grass cutting blade 230-2
- 8 Grass cutting blade 230-4
- 9 Grass cutting blade 230-8
- 10 Grass cutting blade 250-40 Spezial
- 11 Brush knife 250-3
- 12 Circular saw blade 200 (scratcher tooth)
- 13 Circular saw blade 200 (chisel tooth)



Use cutting tools only in accordance with instructions in chapter "Approved Combinations of Cutting Tool, Deflector, Handle and Harness".

Special Accessories for cutting tools

- Nylon Line for Mowing Heads, for 1 to 6
- Prewound Spool (with nylon line), for 1 to 3
- Thermoplastic Blades, Pack of 12, for 5
- Transport Guard, for 7 to 13

Sharpening Aids for Metal Cutting Tools

- Flat sharpening files, for 7 to 9 and 11, 12
- File holder with round file, for 13
- Saw set, for 13
- STIHL balancer, for 7 to 13
- Sharpening templates (metal and plastic), for 11

Mounting Hardware for Metal Cutting Tools

- Thrust washer
- Rider plate
- Nut

Other Special Accessories

- Safety glasses
- Shoulder strap
- Full harness
- Combination wrench
- Stop pin
- Carburetor screwdriver
- STIHL gear lubricant for brushcutters
- STIHL Filler Nozzle for Fuels
- Special resin-free lubricating oil

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

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 **SL**. The symbol may appear alone on small parts.

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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