

# Chainsaws

Chainsaw engines need the regular maintenance covered in the rest of this course.

**All** chainsaws use 2-stroke engines.

These engines work hard in very dusty conditions. Check especially:

- Air filter – clean or replace the mesh or fibre filter in the side of the saw every hour or so in use
- Fuel filters – clean. There is usually a mesh filter on the end of the fuel line in the fuel tank.
- Spark plug – clean and gap
- Clean wood chips and dust from cooling fins, around the fuel tank and carburettor



In addition, chainsaws also need the following maintenance.

- Controls and mountings
- Chain bar lubrication
- Adjust chain and bar
- Replace or sharpen chains

Always follow the maker's booklet for the way to do things and the parts you need.

## Controls and mounts

Check all nuts, bolts and mountings – keep them tight.

Oil and/or clean controls and cables – such as throttle, chain adjusters

Check the chain-brake works correctly (if there is one fitted). Clean around the operating levers.

## Chain bar lubrication

The saw chain and bar need constant lubrication as the saw is used. Both will get hot and wear out quickly without oil.

“Bar-oil” is a thick, special oil for the job. It is cheap. Use the correct oil if you can. A thick engine oil will do the job, but it is expensive, makes more mess and smells!

Drops of oil are pumped onto the chain automatically from an oil tank in the body of the chainsaw. Some chainsaws also have a pump button you can push to get extra oil if the saw is working in really hard wood.



Check the oil tank has plenty of oil before you start the saw. To do this on most saws, unscrew the filler cap and look in the tank. Fill to the top! Check the tank again whenever you stop to re-fuel the saw.

Before cutting with the saw, check that you can SEE oil on the chain or bar. (keep your hands well away!) Give 2 or 3 manual pumps if you have one – and check for oil around the bar and chain.

If you hold the saw with the bar pointing at a light-coloured surface and rev the engine, you should see a dark patch of oil spray onto the surface and you will know the oiler is working.

## **Chain and bar**

### **Chain tension**

The chain must be just the right tightness on the bar (called 'tension').

If the chain is too tight,

- it won't turn easily
- it will wear the chain and the bar
- it can break!

If the chain is too loose,

- it won't cut properly
- it will wear the bar
- it may come off the bar when its running – very dangerous!

Check the chain tension each time before you start work. Adjust it if needed.

As you use the chain saw, the chain will get warm and expand slightly and get looser on the bar.

Never tension or replace the chain while it is hot. The chain will shrink as it cools down and damage the guide bar or the crankshaft of the engine.

A chain is tensioned correctly when:

- There is **No** slack underneath



*this chain is too loose.*

- You can **just** pull the chain away from the top of the bar



*this chain is correct*

- You can pull the chain around the bar easily

### To adjust the chain tension:

- Turn the engine off
- Loosen the securing screws of the chain cover. You only need to loosen them – no need to remove them.
- Then turn the tensioning screw with a screwdriver



*Tensioner screw on a McCulloch chainsaw*



*Tensioner screw on a Stihl chainsaw*

The tension screw is in different places on different models.

- Check the chain and turn the screw until the tension is correct
- Pull the tip of the bar upwards as you tighten the securing screws.

Be careful when pulling on the chain – it should be sharp! Use a cloth or gloves to hold it

## Changing chains and bar



Use the correct size, type and length of bar and chain for your model.

Make sure the engine switch is OFF.

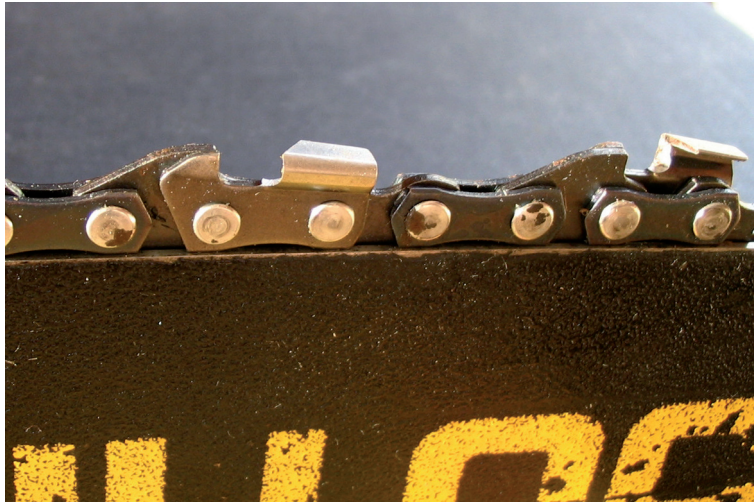
- Undo the retaining bolts or screws on the chain/clutch cover
- Remove the cover
- Remove the chain and bar
- Clean all parts of saw dust and old oil.  
Scrape all dirt and deposits from the groove in the bar.  
Use a small screwdriver or some other sharp object.
- Turn the bar over each time. Fit a new one when it is worn.
- Refit the bar and fit the chain around the bar and drive gear/sprocket.
- Fit the cover – loosely  
Make sure you put back all the bolts, screws and washers in the right way.
- Tension the chain correctly
- Tighten the cover screws

Before making the first cut with a new chain, you should allow the chain to “run in” for a few seconds.



# Sharpening a chain

Chains must be sharp to cut properly.



*Chain and teeth*

The angle and height of the cutting edge on the chain teeth is VERY important. The edge may feel sharp – but if the angle is wrong – it' won't cut well.

In a workshop, chains are sharpened precisely with a special grinder in a jig. That is the best way to do it.

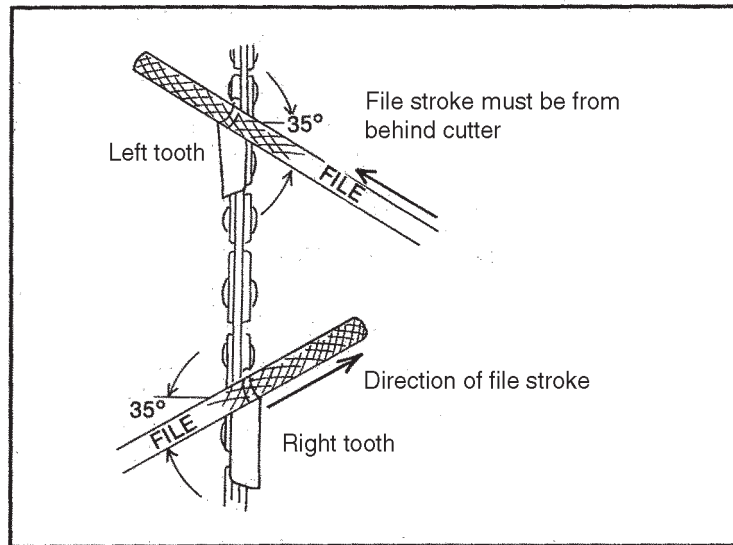
You can keep the teeth sharp with a small, round file, but:

- it **MUST** be the right size of file for the type of chain you have
- you must keep the file at exactly the correct angle

File each tooth.

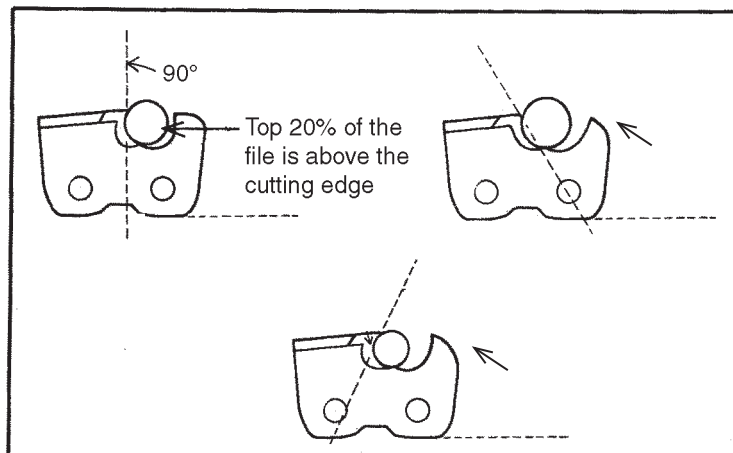
Push the file through, lift the file, push through again. **DO NOT** drag the file back through the tooth – you will blunt the chain **AND** the file!

File from the open side of the tooth – like this:

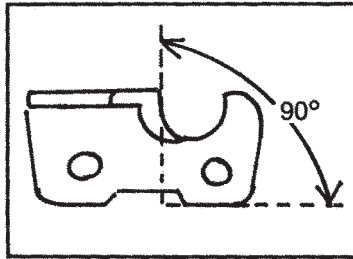


Keep the file level and at about the angle shown in the diagram.

Keep the file towards the top of the tooth – about one-fifth (20%) should be above the cutting edge – like this



The tooth should look like this:



File until all the cutting edge is sharp – about 4 to 10 strokes should be enough.

Try to use about the same number of strokes for each tooth – to keep the teeth the same size.