

Sharpening saw chains



TRUST BLUE

The fast way to the perfectly sharpened saw chain

PFERD (the German term for horse) is leading in the **development, production and support**, as well as in the **distribution**, of tool solutions for **work on surfaces and material cutting**. In keeping with a **tradition** that dates back more than 200 years, PFERD operates as an independent, internationally oriented, **family-owned company** geared towards the long term.



For 200 years, the company has been manufacturing files of a world-renowned high quality. Many years of experience as a tool manufacturer have led to the steady development of PFERD files.

Application-oriented file shapes and cuts for industry and crafts guarantee good economic value. Even after long use, PFERD files achieve high stock removal rates and an excellent surface quality.

State-of-the-art production technology and strict quality controls guarantee the outstanding PFERD quality.

PFERD is certified according to ISO 9001.

We have compiled our years of experience and our know-how on maintaining saw chains in this pocket guide.



For further information on servicing and maintaining saw chains and repairing other forestry equipment and accessories, please also refer to our brochure "PRAXIS FOCUS – PFERD tools for forestry".

Why sharpen saw chains?

Sharpening early enough ensures:

- Less wear to the cutting set and chain saw.
- Better cutting performance and higher cutting speed.
- Less fuel consumption and lower exhaust emissions.
- Fewer vibrations and better work comfort.
- Lower expenditure of force and less physical strain.
- Reduced accident risk.

① Note

- By **resharpening early enough**, less material needs to be removed and the **time needed to sharpen is considerably reduced**.



① Note

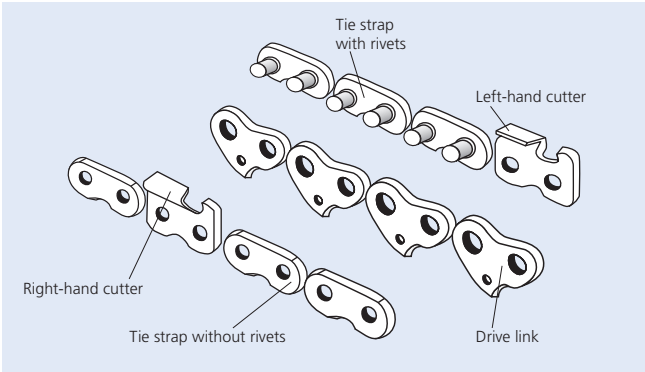
Please observe the current instructions and recommendations of the manufacturer of the respective chain saw or device.



Sharpening saw chains

Structure and function of a saw chain

Components of a saw chain

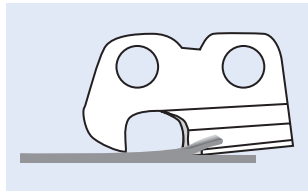


Function of a saw chain

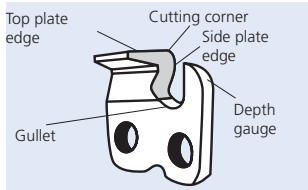
The saw chain on a chain saw works according to the **plane tooth principle**. The chips are literally “planed out” of the material.

The **cutting tooth** automatically works itself into the material. The **cutting corner** of the tooth carves out the wood shavings and the **side plate edge** cuts them off the side of the material.

The **depth gauge** determines the thickness of the wood chips and limits the penetration depth of the tooth into the wood.



Plane tooth principle



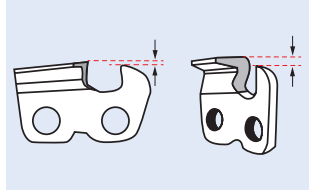
Structure of a cutting link



Depth gauge distance

The **distance between the cutting corner and the depth gauge** has to be the **same** on all cutting links.

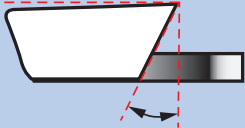
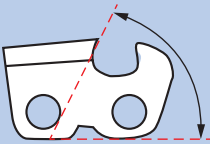
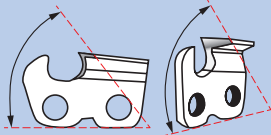
Depending on the chain type, pitch and application, manufacturers' recommendations regarding the depth gauge distance are **.025"** (0.65 mm) or **.030"** (0.75 mm).



① Note

- For safety reasons and in order to reduce vibrations, it is recommended to **readjust the shape of the depth gauge** as well.

Angles to be considered

Angle \ Tooth shape	Semi-chisel	Full-chisel
Sharpening angle 	30° oder 35°	25° oder 30°
Side plate angle 	80°–85°	60°–70°
Top plate angle 	60°	60°

① Note

- The **optimum sharpening result** is achieved by the **interaction of all angles**.
- Recommended angles vary. Follow the **manufacturer's specified angles** for your saw chain.

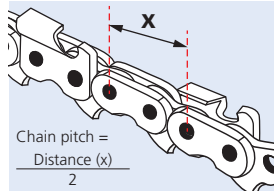
Sharpening saw chains

Chain pitch, file diameter

Chain pitch – choosing the right file diameter

Determining the chain pitch

- The pitch of the chain is established by **dividing the distance between three consecutive rivets by two** (the reference point is the centre of the respective rivet).
- The sizes are provided in inches.



Determining the file diameter

Chain pitch		File diameter	
Inch	mm	Inch	mm
1/4"	6,35	5/32"	4,0
.325"	8,25	11/64"–3/16"	4,5–4,8
3/8"	9,52	13/64"–7/32"	5,16–5,5
.404"	10,26	7/32"	5,5
3/4"	19,05	5/16"	7,9

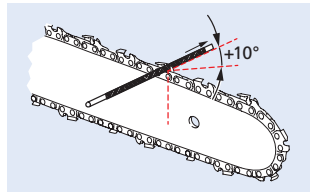
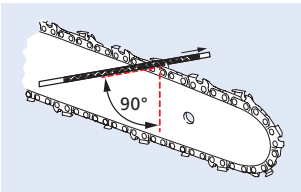
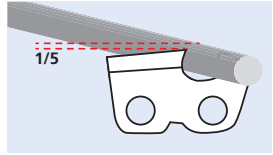
① Notes

- In the case of so-called **Low Profile (LP) chains**, please refer to the respective manufacturer's details.
- When sharpening a saw chain, always **wear suitable gloves and safety glasses** to reduce the risk of injury.



Controlling the file correctly

- 1/5 (20 %) of the file diameter should protrude **over the top plate**.
- Guide the file at a **90° angle** horizontally to the guide bar.
- A **sharpening angle of 30°** is preferred.
- File from the **open inner side** of the tooth **outwards**.
- Make sure to apply **light and even pressure** to the file while moving it forwards.



Depending on the chain or tooth type and the manufacturer recommendation, the file is controlled horizontally = 90° to the guide bar or with +10° gradient. The sharpening angle might also differ.

📌 Notes

- Make sure to only work on the cutting tooth. **Do not accidentally damage other components.**
- The file only removes material while it is moved forwards. Therefore, please make sure not to touch the chain when moving the file back in order to prevent damages to the cutting teeth and the file itself.



You can find the recommendations of chain manufacturers in our PRAXIS FOCUS "PFERD tools for forestry".





The sharpening process:

- **Clean** the saw chain.
- **Check** the saw chain **for damages** and, if need be, replace damaged components or dispose of the chain.
- **Secure** the chain saw.
- **Identify** the **shortest tooth** (for orientation) on both sides.
- **First sharpen** all cutting teeth **on one row** and then **move to the other side**.
- **Check** the **sharpening result**:
 - Has the **sharpening angle** been maintained?
 - Are the **side and top plate angles** correct?
 - Are the **tooth lengths** consistent?
- **Check** the **depth gauge distance**:
 - If necessary, **reduce the height of the depth gauge** using a flat depth gauge file.
 - **Adjust** the **shape of the depth gauge**.

① Notes

- **Increase the chain tension** during the sharpening process to prevent the cutting teeth from moving or lifting.

Final work:

- **Remove metal shavings** from the saw chain/cutting set.
- **Lubricate** the saw chain.
- **Readjust the chain tension** according to the manufacturer's details.

