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The basics of sharpening

MARIAUD CONSULTING

OUR PROGRAM

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The basics of sharpening

🔪✨ Why Sharpen Your Tools?

Sharpening is a fundamental practice in any trade that uses sharp tools, whether it's in carpentry, cooperage, cooking, or cutlery.

A well-sharpened tool offers several advantages:

- **Less effort**: A clean edge penetrates material without force. This reduces fatigue and makes the work more fluid.
- **More precision:** A clean cut improves the quality of the finished work. The edges are clean, without chips or burrs.
- **More safety:** Paradoxically, a sharp tool is safer. With less effort to apply, you have better control of the movement and avoid accidents related to slipping.
- **Prolonged lifespan**: Regular maintenance of the edge limits premature wear of the tool and avoids major repairs.
- **Time-saving**: An efficient tool allows you to work more quickly and more effectively.

⚠️ Consequences of Poor Sharpening

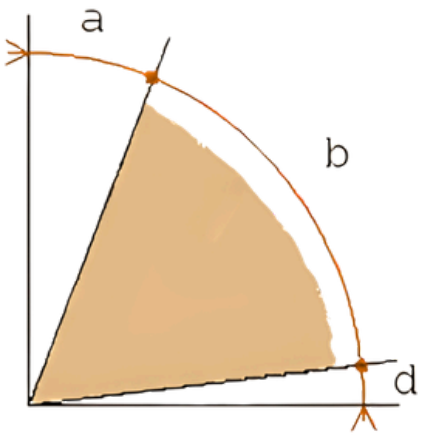
A poorly sharpened or unmaintained tool can lead to:

- Sloppy and imprecise work: Cuts are rough
- requiring manual correction; wood splinters or metal is crushed.
- Injuries: Forcing with a dull tool promotes sudden and uncontrolled movements, increasing the risk of deep cuts.
- Excessive fatigue: Forcing to cut wears out the user as quickly as the tool.
- Material waste: A bad edge can damage the material (cracked wood, split staves, crushed food).
- Premature tool wear: A poorly used tool (because it cuts poorly) heats up more, dulls faster, or deforms.

The basics of sharpening

02 Fundamental principles

To properly sharpen a tool, you must first understand **how an edge is formed.**
Three simple concepts are important to know:
The bevel angle, the clearance angle and the cutting angle



a Cutting angle

b The bevel angle

d Clearance angle

The bevel angle 🔪

It's the angle formed by the two faces that meet to create the edge (the cutting edge).

👉 The more **acute** (small) the angle, the easier the cut... but the more fragile the edge.
👉 The more **open** (large) the angle, the more solid the edge... but the cut requires more effort.

Practical examples:

- **Wood chisel**: 25°–30° ➔ a compromise between fineness and robustness.
- **Kitchen knife**: 15°–20° per side ➔ ultra-precise cut but faster wear.
- **Axe:** 35°–40° ➔ solid edge to withstand shocks.

✅ **Simple rule:** sharpen at the recommended angle for your tool. If you don't know, copy the existing angle.

02 Fundamental principles

Clearance angle ↘️

It's **the angle that prevents the back of the tool from rubbing against the material** after the cut.

👉 **If the clearance is good**, the tool slides well into the material.
👉 **If the clearance is bad**, the tool jams or rubs unnecessarily.

In practice:

- On a chisel, the flat face acts as the clearance.
- On a knife, the clearance is shared between the two bevels.

✅ **To remember:** without clearance, your tool works poorly, even with a good edge.

Cutting angle

It's the final angle between the tool and the material at the moment of attack.

👉 It depends on the bevel AND how you use the tool.
👉 A good cutting angle allows the tool **to penetrate easily**, without slipping or scratching.

Examples:

- With a chisel, you must tilt it slightly so that only the edge attacks.
- With a drawknife, the pulling motion is natural to get the right angle.

✅ **Tip**: during use, **trust your instincts**: if it forces or slips, the angle is probably poorly managed.

How to choose the right angle? 🎯

- Respect **the tool's intended use**: delicate work = **fine angle**; rough work = **strong angle**.
- If you are a beginner, **copy the existing angle** of your tool.
- When in doubt, start at **25°–30°**, which is suitable for most hand tools.

Grinding wheels

Definition: A rotating abrasive disc used on a grinder or sharpener.

Types of grinding wheels:

- **Dry grinding wheel** (classic bench grinder): fast but be careful of overheating the blade 🔥**.**
- **Wet grinding wheel**: turns slowly, cools continuously, prevents burning the steel ❄️.

Uses:

- Reshaping the bevel on very damaged tools.
- Initial rapid roughing out.

Advantages:

- Fast material removal.
- Suitable for major repairs (chips, severe dullness).

Disadvantages:

- Risk of overheating the edge if used improperly.
- Often a rough finish, to be followed by work on a stone.

Beginner's Tip:
👉 **Use a wet grinding** wheel if possible to avoid damaging your tool.

Sharpening stones

Definition: A manual abrasive block used to refine and polish the edge.

Types of stones:

- **Water stones** (the most classic): need to be moistened before use.
- **Oil stones:** are used with special oil.
- **Diamond stones:** very hard, flat, effective on very resistant steels**.**

Common grits:

- **Coarse grit (~200–400):** roughing out.
- **Medium grit (~800–1000):** standard sharpening.
- **Fine grit (~3000–8000):** polishing and razor-sharp finish.

Uses:

- Precision sharpening.
- Fine finishing after a grinder or manual sharpening.

Advantages:

- Ultra-precise and fine result ✨.
- Low risk of damaging the blade.

Disadvantages:

- Slower than a grinder.
- Requires maintaining the angle by hand (or using a guide).

Beginner's Tip:

👉 Start with **a 1000 + 6000** stone to cover 90% of common needs.

Different Sharpening Stone Shapes

Flat stones:

- The most classic shape.
- Used for flat tools: chisels, knives, plane irons, drawknives.
- Allows for a perfectly straight and regular bevel.

Concave (hollow) stones:

- A stone that is slightly curved inward.
- Suitable for maintaining curved tools: gouges, round drawknives, augers.

Oval or "rifle" shaped stones:

- A long and rounded stone (like a pencil).
- Used to sharpen the inside of curves (e.g., gouges, cooper's crozes).

Special 'scythe' stones:

- Elongated and slightly curved stones for sharpening large curved blades like scythes, sickles, or certain agricultural tools.

Sharpening Guides

Definition: A small tool that holds the tool to be sharpened at the desired angle.

Uses:

- Wood chisels.
- Plane blades.
- Small knives.

Advantages:

- Constant angle guaranteed 🎯.
- Ideal for learning without rounding the bevel.

Disadvantages:

- Limited by blade size.
- Slower than 'freehand' sharpening.

Beginner's Tip:

👉 **Use a guide to learn the right movements**, especially for chisels and plane irons.

Complementary Sharpening Accessories 🛠️

- **Polishing leather:** for de-burring and finishing with a mirror-sharp edge.
- **Honing steel:** for quickly maintaining a knife between two real sharpenings.
- **Abrasive paste:** used on leather to boost the polishing effect.
- **Grinding wheel dresser:** a tool for reshaping and cleaning grinding wheels.

The basics of sharpening

04

To sharpen a tool, it's not complicated **if you follow the correct steps in the right order.** Here is the clear and simple method to succeed every time.

Preparing the tool and the workstation

Before you begin:

- Clean the tool (remove rust, residue, and dust).
- Set up your workspace:
  - **Proper lighting** 💡
  - **Water or oil** within reach
  - **Stones or grinding wheels** ready
  - **Sharpening guide** if needed
- Define the angle to maintain:
  - Copy the existing angle if the tool is already well-formed.
  - If necessary, aim for **25–30° f**or a standard chisel or knife**.**
- Wet the whetstones (soak for **5–10 min before use).**

✅ **Practical tip:** Mark the bevel with a marker to check if you are maintaining the correct angle while sharpening.

Sharpening the Bevel (Coarse Grit)

Goal: to reform a clean and straight cutting edge.

- Use a coarse-grit stone (~800–1000) or a grinding wheel.
- Lay the tool flat on the abrasive at the chosen angle.
- Make regular movements:
  - Over the entire length of the bevel.
  - Always in the same direction (push or pull).
- Maintain moderate and constant pressure.
- Continue **until a burr appears**:
  - A small metallic edge that can be felt on the opposite edge.

✅ **To check**: The bevel must be uniform across its entire width.

Finishing Sharpening (Fine Grit) ✨

Goal: to smooth and polish the cutting edge.

- Switch to a fine stone (~3000–8000) or a leather strop.
- Repeat the same motions:
  - Same angle, less pressure.
- Make light, fluid passes.
- Aim for a mirror-like bevel with no deep scratches.

✅ **Tip**: The more you reduce the pressure during finishing, the finer and more durable the edge will be.

De-burring and Final Polishing 🧽

Goal: to remove the burr and perfect the edge.

- Gently pass the tool over a leather strop or an ultra-fine stone.
- Alternate sides with each pass to break off the burr.
- Clean the blade.
- Check the sharpness (paper or hair-cutting test).

✅ **Warning:** Never leave the burr in place; it immediately weakens the cut.

Practical Cases

W**ood Chisel** 🔨**:**

- Sharpen only the bevel.
- De-burr the flat face to get a perfectly smooth back.

Cooper's Plane 🍷**:**

- Follow the natural curve of the cutting edge.
- If needed, use a convex stone.

To remember 🧠

A successful sharpening means:

- A constant angle
- A well-formed and then eliminated burr
- A smooth and shiny bevel
- A clean tool, put away after use

05 Safety and Maintenance

Sharpening is a simple operation **that requires vigilance.**
Protecting yourself and maintaining your tools well extends their life and guarantees your safety.

Safety While Sharpening ⚠️

You must do this:

- **Protect your eyes 👓:** safety glasses are mandatory if you use a grinding wheel or any motorized abrasive.
- **Stabilize the tool ✋:** work with the tool rest or with both hands on the stone.
- **Work at a controlled speed 🐢:** no sudden movements or excessive pressure.
- **Cool the blade regularly ❄️:** in case of mechanical sharpening, dip it in water every 5–10 seconds to avoid overheating.
- **Keep a clear workspace 🧹:** no trailing cables or objects placed precariously.

✅ **Safety tip:** Always orient the blade so that if it slips, it moves **away from your body.**

Tool and Equipment Maintenance 🔧

To extend the life of your tools:

- **Clean after each sharpening 🤏:**
  - Remove abrasive and metal residue.
  - Dry the tool thoroughly.
- **Protect against corrosion 🛡️:**
  - Lightly oil the blade (especially carbon steel).
  - Store in a dry place.
- **Store correctly 🗄️:**
  - Use appropriate sheaths, blade guards, or holders.
  - Never let the blades touch each other.

✅ **Maintenance tip:** A thin layer of camellia oil or WD-40 effectively protects against moisture

05 Safety and Maintenance

Sharpening Equipment Maintenance:

- **Stones:**
  - Regularly flatten the stones to avoid hollows.
  - Rinse well after use to remove abrasive slurry.
- **Grinding Wheels:**
  - Dress the wheel to maintain a regular surface.
  - Check for cracks or imbalances.

To remember🧠

👉 **Safe sharpening means:**

- A clean and secure workspace 🔒
- Calm and controlled movements 🧘
- A clean, oiled, and properly stored tool after each session 🛠️

How to flatten a sharpening stone 🪨

Why?

A whetstone wears down over time. The center gradually develops a hollow. If the stone is no longer flat, you will no longer get consistent sharpening, and you risk unintentionally rounding your bevel.

Simple Methods for Flattening a Stone:

With a Diamond Plate (The Ideal Method):

- Use **a flat diamond plate with a grit of about 150–300.**
- **Lightly wet** both the stone and the plate.
- **Rub the stone over** its entire surface using circular or "8" motions.
- **Check for flatness** by running a pencil over the stone: the entire surface should be touched uniformly.

With Abrasive Paper on a Flat Surface:

- Place **abrasive paper with a grit of 180–240** on a thick pane of glass or a marble slab.
- **Wet it lightly.**
- **Pass the stone** over the paper, applying uniform pressure**,**
- **Using "8" motions to wear it down evenly.**

With a Flattening Stone:

- This is a specific accessory (a very hard, grooved stone).
- Rub the whetstone against the flattening stone, under water.

✅ **To remember:** You must flatten your stone as soon as you feel it is hollowed out or when your sharpening becomes inconsistent.

How to dress a grinding wheel ⚙️

Why?

A grinding wheel also wears unevenly (hollows, bumps, glazing). If the wheel is no longer round and regular → you risk poor sharpening or accidents.

Methods for Dressing a Grinding Wheel:

With a Star Wheel Dresser (Classic Tool):

- **Hold the dresser** firmly against the tool rest of the grinder.
- **Gently present the star wheels to the rotating grinding wheel.**
- **Sweep across the entire surface** of the wheel (laterally) to even it out.
- The result: the wheel regains its round shape and roughness.

With a Dressing Stone:

- A type of large, very hard abrasive block.
- Same principle: rub it against the rotating wheel to remove irregularities.

✅ **To Remember:**

- Dress gently, without forcing it.
- Make light and regular passes.
- Always wear safety glasses (possible shards).

🗒️ Memo Sheet 1: Sharpening Checklist (Essential Steps)

✔️ **Before Sharpening:**

- Clean the tool 🔍
- Prepare stones, grinders, guide 📏
- Moisten water stones 💧
- Determine the desired angle 🎯

✔️ **During Sharpening:**

- Maintain a constant angle 🔒
- Use smooth, regular motions with moderate pressure 🚶‍♂️🚰
- Work to raise the burr ✨

✔️ **After Sharpening:**

- Polish with a fine grit or on a leather strop 🤜
- Carefully remove the burr 🔧
- Clean and oil the blade 🛡️
- Test the cut ✂️
- Store the tool safely 📦

⚠️ Memo Sheet 2: Mistakes to Avoid

⛔ Changing the angle while sharpening ➔ a rounded bevel and a poor edge.

⛔ Overheating the blade ➔ damaged steel, a ruined tool.

⛔ Forgetting to raise or remove the burr ➔ an ineffective cut and a fragile edge.

⛔ Sharpening on a grooved stone or a worn wheel ➔ uneven sharpening.

⛔ Working in a poorly organized space ➔ risk of an accident.

⛔ Using too much force or going too fast ➔ loss of control, possible injury.

✅ Always work calmly, methodically, and check your movements.

💡Memo Sheet 3:
Tips for Extending Tool Lifespan

- 🛠️ **Sharpen regularly** instead of fixing a damaged edge.
- 🧴 **Lightly oil** your blades after sharpening to prevent rust.
- 🧹 **Clean your stones** and flatten them if needed.
- 🔄 **Dress your grinding** wheels as soon as they become uneven.
- 🧵 Store your tools correctly (blade guards, racks, blocks).
- 🚫 **Don't use your tools for unsuitable tasks.**
- 👁️ **Observe your tools**: learn to spot when they start to get dull so you can take action early.

🛠️ Mini Memo Sheet:
Maintenance of Stones and Grinding Wheels

Maintenance of Sharpening Stones 🪨

✓ **After Each Use:**
- Rinse with clean water to remove abrasive residue.
- Wipe with a clean cloth.
- Let it dry completely before storing (for water stones).

✓ **Flatten Regularly:**
- Use a diamond plate, a flattening stone, or sandpaper placed on a very flat surface (like glass or marble).
- Make figure-eight motions to wear it evenly.
- Check for flatness with a pencil if needed**.**

✓ **To Avoid:**
- Do not store while wet in a closed place (risk of mold or freezing).
- Do not use a grooved stone ➔ guarantees uneven sharpening.

Maintenance of Grinding Wheels ⚙️

✓ **Before Use:**
- Visually inspect the wheel's condition (no cracks, clean surface).

✓ **During Use:**
- Cool the tool often to prevent glazing the wheel.
- Don't press too hard (this wears out and deforms the wheel).

✓ **Dress the Grinding Wheel if Needed:**
- Use a star wheel dresser or a dressing stick.
- Sweep across the entire width of the wheel with light passes.
- Wear safety goggles while working.

✓ **To Avoid:**
- Using a grooved wheel ➔ risk of poor sharpening and accident.
- Continuing to use a cracked wheel ➔ immediate danger (replace without question)

It's up to you to put your knowledge into practice and perfect your expertise!