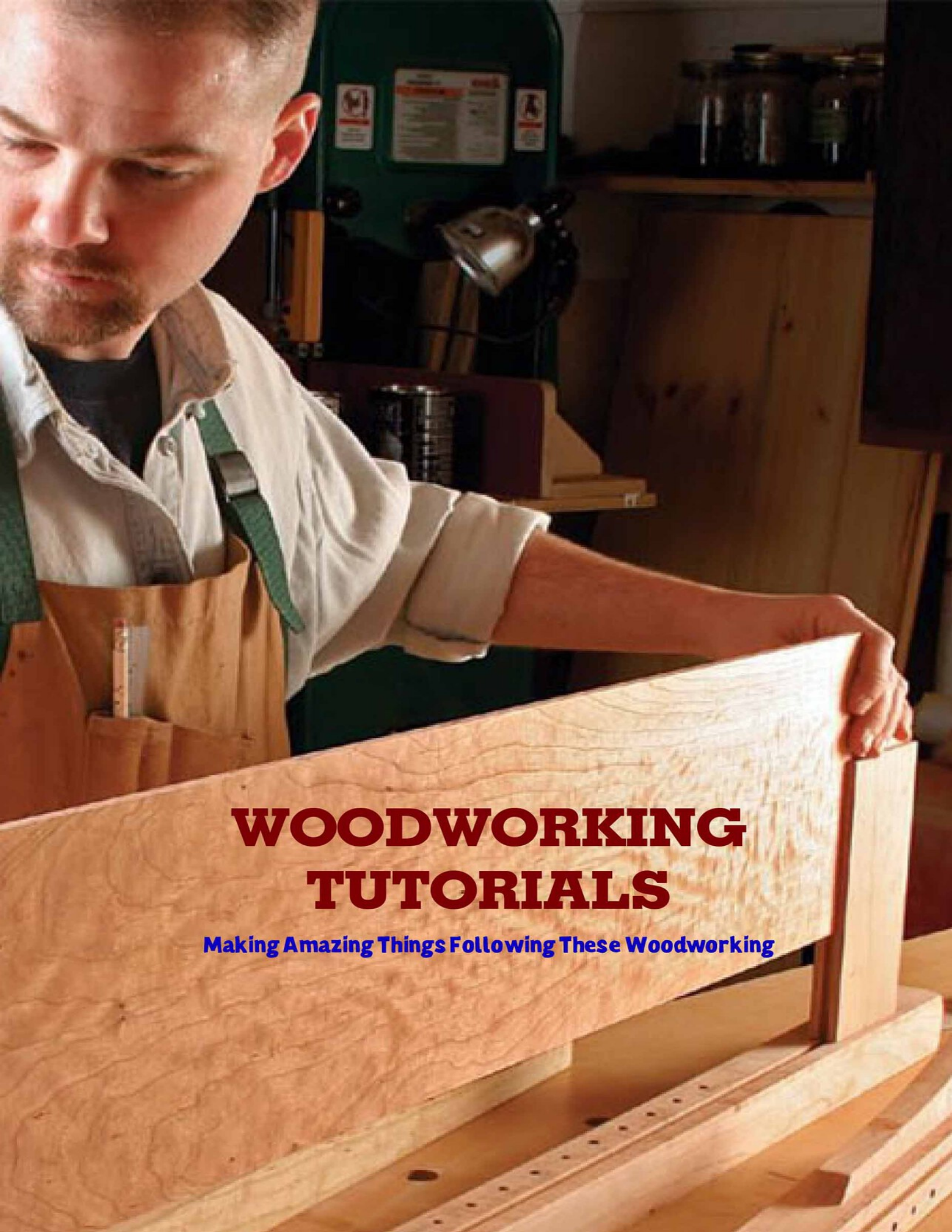


A man with a beard and short hair, wearing a white shirt and brown leather apron, is working in a workshop. He is holding a large, light-colored wooden board with both hands, positioning it on a workbench. In the background, there is a green machine, possibly a planer or jointer, and a wooden cabinet with jars on top. The lighting is warm and focused on the work area.

WOODWORKING TUTORIALS

Making Amazing Things Following These Woodworking

Woodworking Tutorials

Making Amazing Things Following These Woodworking

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What is Woodworking?

Woodworking is the skill of making usable and functional objects from different types of wood. Although woodworking began as a profession, today it has become more of a hobby. An increasing number of people are learning how to work with wood to build anything ranging from simple items like wooden frames and cutlery to complex wooden furniture and dog houses.

If you are a creative person who loves to work with tools, you can take it up as a hobby

Types of Woodworking / Wood work

1. Whittling

Whittling involves carving raw pieces of wood using a knife. Although people use the terms whittling and carving interchangeably, they are different. Unlike carving, you can't use chisels, gouges, or mallets when whittling.



2. Woodturning

Woodturning involves using a wood lathe to usually create symmetrically shaped woodwork such as bowls and spindles. However, you need to develop some skills to learn this woodwork.



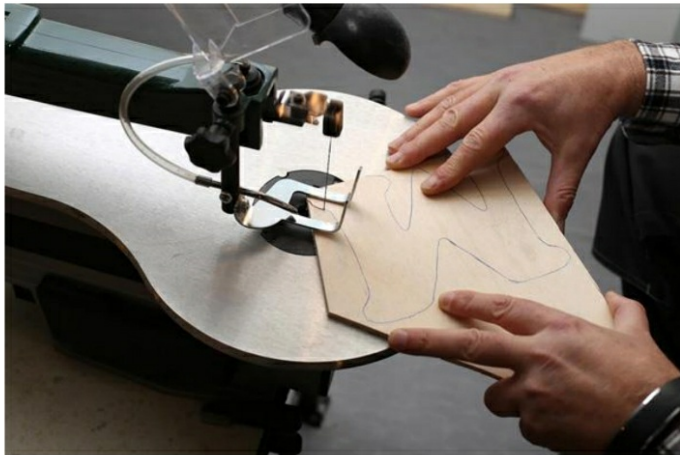
3. Wood Carving

As mentioned earlier, carving is a type of woodwork that involves creating articulate wooden objects. It involves the use of chisels, gouges, knives, and mallets.



4. Scroll-Sawing

This woodwork involves using a machine called scroll saw to create wooden items with intricate curves, especially in thin woods. You can create flat, plaque style, to elaborate 3D objects.



5. Construction Related

It involves making decorative and functional wooden boxes, as well as, furniture like recliners, sofas, chairs, tables, cupboards, wardrobes, and kitchen shelves, among others.



Must Have Woodworking Skills

1. **Know various properties of wood** – You need to know everything you can about different types of wood that you can use for furniture making. Properties such as hardness, color, density, uses, cracks, the fluctuation due to moisture content, and grain patterns vary from wood to wood.
2. **Knowledge of machine tools** – You will need to learn to use various woodworking tools for milling, sanding, boring,

carving, and finishing, among other things. They include machine tools like lathe and scroll-saw.

3. **Choosing Screws** – Choosing the correct size, length, gauge, and type of screws is also critical in woodworking. While short screws will fail to hold boards together, larger ones will pierce through the wood.
4. **Knowledge of hand tools** – You will need to use hand tools like hand planes, chisels, mallets, hammers, knives, scrapers, and vises, among others. You need to know how to use and maintain these tools in excellent condition.
5. **Understand different cuts and joints** - Woodworking involves creating different cuts and joints, including dovetail joint, mortise and tenon joint, finger joint, biscuit joint, and rabbit joint, among others.

Know materials used for finishing – No woodwork is complete without a final finish. You need to have a clear understanding of different types of finishing materials like varnishes, stains, lacquers, and glosses.

Woodworking Tools

Before you start with any woodworking project, you need to have a clear idea of different woodworking tools and their uses.

HAND TOOLS

These are tools that are hand-powered and do not require electricity.

Chisel

You will need to use a chisel to clean out joints and mortises, refine edges, and even carve the wood. You should have at least four different sizes of chisels, including 1/4 inch, 1/2 inch, 3/4 inch, and 1 inch.



Measure Tape and Layout Square

You need the first tool for every day measuring tasks. With a layout square, you can make 90-degree cutting lines and measure up to six inches.



Sliding Bevel

A sliding bevel allows you to make cutting lines at any angle. With a lock-in mechanism, you can get accurate measurements.



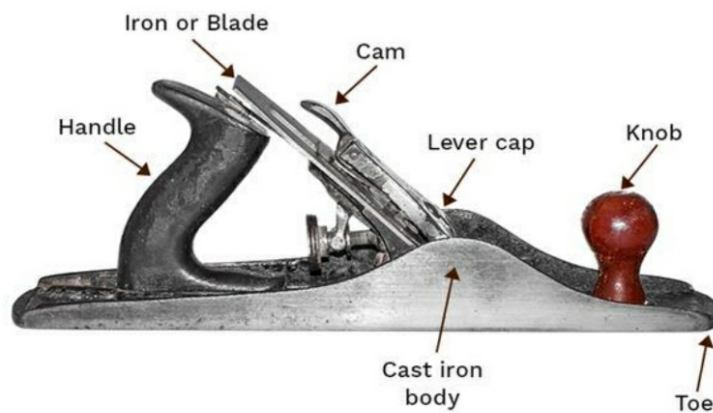
Punches and Hammer (Claw and Ball Peen Hammer)

Claw hammer has a claw for removing nails and a solid hammerhead. Most woodworkers use a 20-ounce claw hammer. One end of a Ball Peen Hammer, on the other hand, is rounded and semi-spherical. The rounded end is often used for striking chisels and punches.



Block Plane

A simple metal-bodied hand plane, you can use it to clean up edges, flatten and trim lumber, add curve and shape, and remove thin shavings of wood.



Utility Knife

An all-around tool, you can use a utility knife to cut, pare, mark, scribe, and peel wood. Make sure to buy a heavy-duty knife and keep it in excellent shape.



Screwdrivers

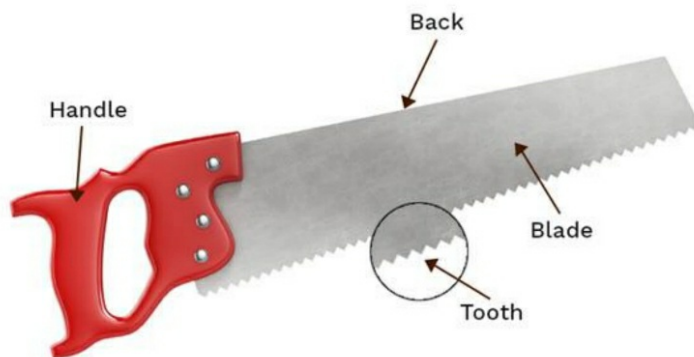
Screwdrivers often come in handy where you can't use a power drill. Make sure to buy a range of sizes with both flat-head and Phillips.



Hand Saw

You need a hand saw to cut through the grain. It comes in different shapes and sizes. You will need to choose the right one depending on the application. For example –

- Rip Saw – for cutting in the direction of the grain
- Cross-Cut Saw – for cutting across the grain
- Bow Saw – for trimming trees, pruning, and cutting



Smoothing Plane

As the name suggests, this tool is used for creating a fine finish on a wood surface. It is a type of bench plane. You need to practice though.



Clamps

Clamps come in different shapes and sizes. You need clamps to hold freshly glued joints together or attach a piece of wood to firmly to the workbench.



Carving Tools

You need a variety of carving tools for different basic woodworking techniques. They include carving knives, chisels, Veiners, v-tools, gouges, and gloves, among other things. They also come in different shapes and sizes depending on the use.



Workbench

It is a table you can use to work on your DIY woodworking projects. A workbench will help you hold the pieces of wood firmly while you are working on them. You have the option to make a workbench of your own or buy a readymade piece.



POWER TOOLS

Power tools are woodworking devices or machines that work mainly with the help of an electric motor or may be either corded or battery-powered.

Jigsaw

You need a jigsaw to cut circular and curved shapes from wood. Also called a Sabre Saw, this power tool comes with an easily replaceable set of multiple blades.



Power Drill

Power drill makes it easier to fit screws and make drills. You can find cordless and corded power drills with varying features and drill sets. However, corded power drills offer better value for money.



Drill Press

Apart from drilling holes, you can use a drill press for sanding spindles, doweling, and even make mortise and tenon joints. A bench-top model is suited for beginners and woodworkers with a small workspace. You need a stationary model for large DIY projects like furniture making.



Table Saw

It is a versatile woodworking tool. You can use it to cut wood lengthwise and also across the grain. It comes in different shapes and sizes and with an array of features.



Wood Router

It is a high-speed rotary tool. You can use it for a variety of woodworking applications, including finishing or rounding edges and making holes, contours, slots, and grooves. Make sure to buy a model with electronic variable speed controls.



Circular Saw

It is a power-saw. A circular saw can cut through different woods, ranging from beams to wooden planks. However, you need to have an array of blades, usually made from Tungsten Carbide Tipped (TCT), to make that happen.



Nail Gun

A nail gun makes the light work of driving nails into wood, especially for roofing, flooring, and framing tasks. You can find a variety of nail guns based on what kind of nails they use, power source, and application.



Random Orbital Sander

It is a hand-held power tool for sanding. The blade delivers rotating and orbiting motion, resulting in a randomized sanding pattern. You can find different variants in the market.



MACHINE TOOLS

Machine tools are non-portable, stationery power tools.

Surface/Thickness Planer

You need a surface planer to machine lumber to a final uniform thickness. You can get models with variable speeds, and preset depth stops. They are an excellent choice for making repetitive cuts.



Chain/Chisel Mortiser

It allows you to produce a perfectly clean and true mortise (square or rectangular holes) in a piece of lumber in minutes. Chain Mortisers are commonly used in timber framing.



Jointer

This woodworking machine allows you to prepare narrow board edges for butt joints or gluing. A DIY woodworker can use a bench top or small open stand jointer for making boxes.



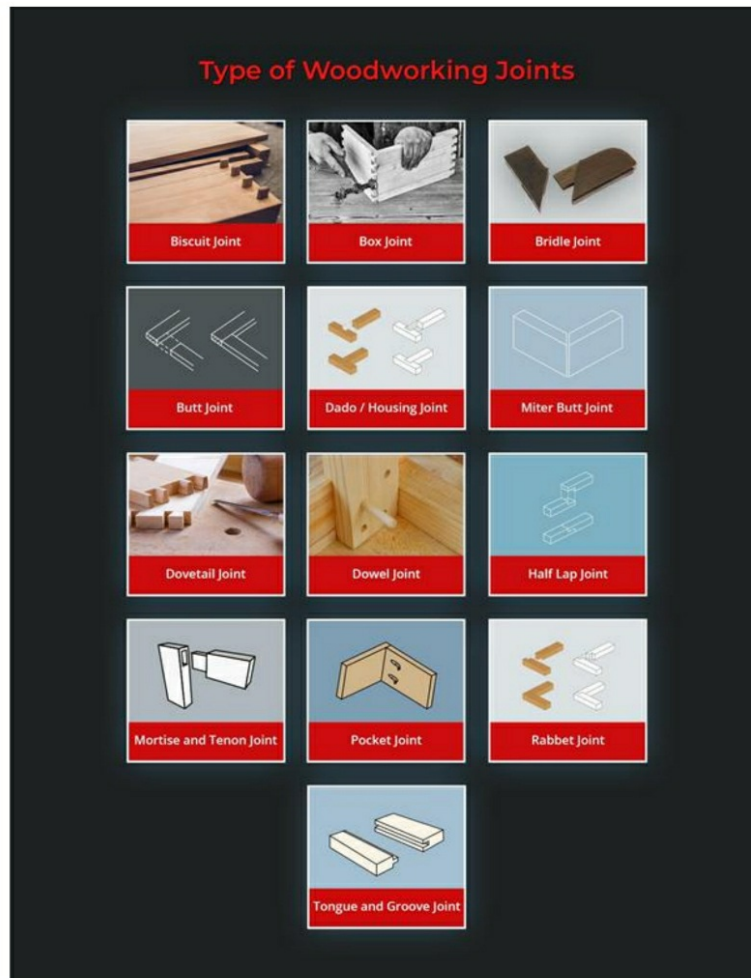
Band Saw

The primary use of a band saw is to cut irregular or odd shapes. With a suitable blade and tension, you can make smooth cuts required for refined wooden items. You can also use it for cutting thin veneer strips and resawing boards.



Type of Woodworking Joints

You need to know about a few types of woodworking joints as a beginner.



1. Biscuit Joint

Description: An oval-shaped piece of usually compressed wood glued into two crescent-shaped holes.

Application: To join large timber boards together such as tabletops.

2. Box Joint

Description: A corner joint with interlocking square fingers, its a practical alternative to dovetail joints.

Application: Making corners of boxes or box-like structures.

3. Bridle Joint

Description: A corner joint similar to a mortise and tenon where the through mortise is open on one side and forms a fork shape

Application: Joining the tops of principal rafters.

4. Butt Joint

Description: The end of one piece of wood is butted against the other with glue.

Application: Wall framing on construction sites.

5. Dado / Housing Joint

Description: The end of one piece of wood inserted in a channel cut across the face another piece about three-quarters of its depth.

Application: Plywood shelves and cabinetry.

6. Dovetail Joint

Description: A box joint with diagonally cut interlocking fingers.

Application: Drawers and boxes.

7. Dowel Joint

Description: Round wooden pins of small diameter inserted and glued in the holes of two wooden pieces.

Application: Furniture and construction.

8. Half Lap Joint

Description: Two pieces reduced to half of their thickness and glued together to flush with one another.

Application: Frames for pictures, perimeter door frames, and dust dividers for cabinets.

9. Miter / Mitered Butt Joint

Description: A butt joint where two boards are joined at a 45-degree angle.

Application: Boxes, frames, and light furniture.

10. Mortise and Tenon

Description: A joint where the tenon (stub) from one piece of wood fits into the mortise (cavity) of the other at a 90-degree angle. It is reinforced with glue.

Application: Furniture like tables and desks and construction.

11. Pocket Joint

Description: Joining two boards with a screw placed in a pre-cut slot from one and a pre-drilled hole in another.

Application: Cabinetry and furniture.

12. Rabbet Joint

Description: A type of butt joint with a groove cut at the edge of a piece of wood for a better grip.

Application: Cabinets and glass panes.

13. Tongue and Groove Joint

Description: A protruding groove cut into the length of one piece fits into a crevice of another.

Application: Flooring, parquetry, paneling, and similar constructions.

Woodworking Fasteners

1. HINGES

Hinges are also an integral part of most woodworking projects. A hinge is an external joint that adds opening and closing feature to piece of woodwork.

A. What Is the Purpose of a Hinge?

The primary purpose of a hinge is to create moveable woodworking joints for doors and lids in a variety of furniture and construction projects. Remember, however, the movement of hinges is restricted to only one plane about the central axis.

B. Types of Hinges

Hinges come in a variety of sizes and shapes depending on the application. The most common ones are –



1. Butt Hinge

Description: Two plates with interlocking loops held together by a central guide pin or rod. Strong design.

Material: Steel (interior) and stainless steel, aluminum, or brass (outdoor).

Application: Doors, windows, cabinets, and almost all types of furniture.

2. Butterfly Hinge

Description: Essentially a butt hinge with the design resembling spreading wings of a butterfly from the central pin. It is available in varied designs and shapes.

Material: Varied materials and finishes.

Application: Interior or exterior doors.

3. Continuous / Piano Hinge

Description: Similar to a butt hinge with but they are longer and narrower.

Material: Stainless steel, aluminum, bronze, or brass.

Application: Doors, furniture, and cabinets with intense wear and tear.

4. Ornate Hinge

Description: Essentially a butterfly hinge with aesthetically pleasing designs, colors, and finishes.

Material: Stainless steel, aluminum, bronze, or brass.

Application: Exteriors in furniture and construction.

5. Gate / Strap Hinge

Description: It can be either a butt hinge or a strap hinge. A strap hinge has a longer leaf.

Material: Stainless steel, aluminum, bronze, or brass.

Application: Light and heavy-duty gates.

2. NAILS

Nails are also the most commonly used fasteners in almost all woodworking projects. They come in different shapes and sizes depending on the use. A typical nail, however, has the following elements.

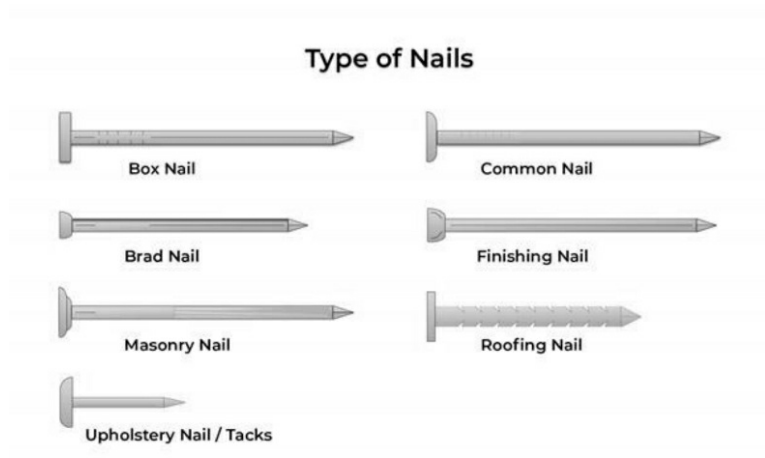
A. Parts of a Nail

- **Head** – Head is the load-bearing element of the nail, which is also the visible part. Its size and finish depend on the application.

- **Shank** – It is the long slender portion or body of the nail. While smooth shanks are most common, sometimes they may have rings or grooves for better holding power.
- **Tip/ Point** – It is the tapered end of a nail which allows you to drive it in a piece of wood. Diamond point nails are common. However, woodworkers prefer using chisel point nails in trim woodwork.



B. Types of Nails:



1. Box Nail

Description: Essentially common nails, but with a thinner shank.

Application: Light construction and household use.

2. Brad Nail

Description: 18 gauge nails with small round heads. Easy to mask in the wood trim.

Application: Trim, moldings, cabinetry, and light DIY woodworks.

3. Common Nail

Description: Everyday nails with lengths varying from one to six inches.

Application: Most medium to heavy framing, construction, and carpentry works.

4. Finishing Nail

Description: Nails made up of 15 or 16 gauge wire with barrel-shaped heads. They are suitable for finish work.

Application: Installing paneling and trim.

5. Masonry Nail

Description: Nails specially designed to penetrate the plaster wall without tearing it down.

Application: Masonry walls.

6. Roofing Nail

Description: Characterized by disproportionately large and round heads and heavier shafts. These nails are specially designed to affix roofing materials.

Application: Roofing.

7. Upholstery Nail / Tacks

Description: Available in round and cut form, these nails have decorative heads.

Application: Hold carpet or fabric to wood.

You can look out for a more detailed list on types of nails here.

C. How Do You Nail Wood without Splitting It?

You need to pound down the tip of the nail before hammering it in the wood. The slightly blunted nail will penetrate the piece of wood without splitting it.

D. What Length of the Nail Is Needed?

Usually, the nail should be at least three times the length of the object you intend to hammer it with. The measurement unit for nails is Pennies. The symbol is “d.” Here’s a table showing nail lengths in pennies and inches.

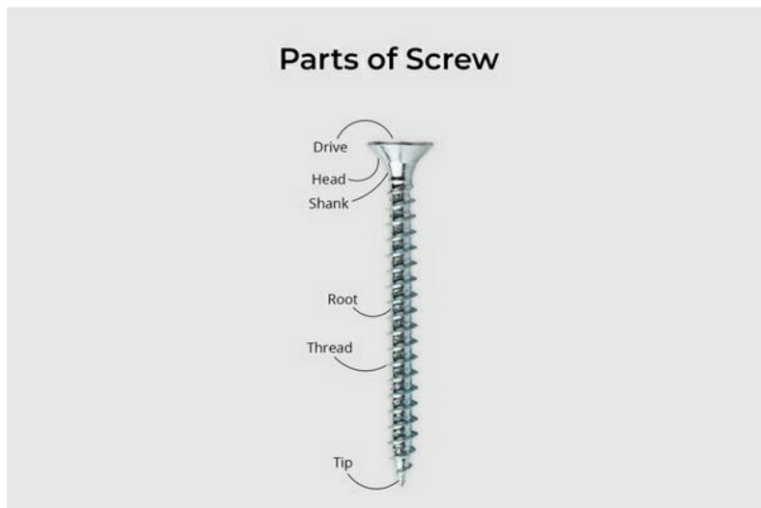
2d = 1 inch	9d = 2 3/4 inches
3d = 1 1/4 inches	10d = 3 inches
4d = 1 1/2 inches	12d = 3 1/4 inches
5d = 1 3/4 inches	16d = 3 1/2 inches
6d = 2 inches	20d = 4 inches
7d = 2 1/4 inches	30d = 4 1/2 inches
8d = 2 1/2 inches	40d = 5 inches

3. SCREWS

Screws are also essential wood fasteners. You can use them in a variety of woodworking projects.

A. Parts of a Screw

- **Drive** – The two most common types of wood screw drives are slotted and Phillips.
- **Head** – Most screws have flat heads, others have oval and round ones.
- **Shank** – Shank is the area between head and thread. Fully threaded screws don't have shank.
- **Thread** – Threads reduce friction when a screw drives into the wood, stopping it from splitting.
- **Tip** – Self-drilling screws have a pointed tip and machine screws have a blunt tip.



B. Types of Screw

You can find a wide variety of this furniture fastening hardware. Let's take a look at a few common types of screws for wood.



- 1. Standard Wood Screws** – Most common, woodworkers use them to fasten two pieces of wood. They come in all kinds of diameters and head shapes, but most of them have a flat head.
- 2. Drywall Screws** – Specially designed for drywall applications, these screws have relatively thin shanks. About six inches in length, they also have threads running the entire length of the screw.
- 3. Deck Screws** – Made from copper or hardened steel, they are corrosion resistant. They also have deep threading and pointed tips. So, you can use them for outdoor woodworking projects.
- 4. Sheet Metal Screws** – Used for attaching metal sheets to wood,

they have pan heads, fully threaded shanks, and a sharp point that easily penetrates metal sheets.

C. What's the Difference between a Wood Screw and a Metal Screw?

Both metal and wood screws have similar physical properties except the threading. Metal screws have fully threaded shanks and also have more pitches (number of threads per inch) than wood screws.

D. How Far Should Screws Go into Wood?

Usually, the screw should enter half the thickness of the bottom piece of wood. It offers a firm and secure fastening.

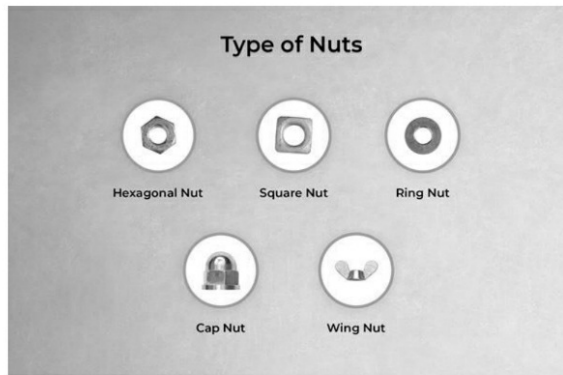
E. What Are Wood Screw Sizes?

	4 Gauge	5 Gauge	6 Gauge	7 Gauge	8 Gauge
Head-Bore Size	15/64"	1/4"	9/32"	5/16"	11/32"
Shank-Hole Size	7/64"	1/8"	9/64"	5/32"	5/32"
Hardwood Pilot-Hole Size	5/64"	5/64"	3/32"	7/64"	7/64"
Softwood Pilot-Hole Size	1/16"	1/16"	5/64"	3/32"	3/32"
Typical Available Lengths	3/8" to 3/4"	3/8" to 3/4"	3/8" to 1 1/2"	3/8" to 1 1/2"	1/2" to 2"

4. NUTS AND BOLTS

Nuts and bolts are commonly used in woodworking applications, especially furniture making. Here are a few common types of woodworking bolts and nuts you will use in your projects.

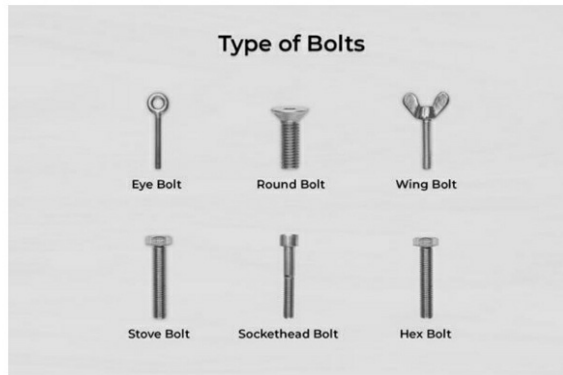
A. Type of Nuts



1. **Hexagonal** – The most common type of nut, you can use it in almost all fastening applications with hexagonal-headed bolts.
2. **Square** – Used to fasten square-headed bolts, this nut offers a better hold on its spanner.
3. **Ring** – It is a ring with slots in the curved surface. You need a special c-spanner to fasten it.
4. **Cap** – It is a hexagonal nut with a smooth-domed top at one end. Its design helps prevent leakage.
5. **Wing** – It is a threaded nut with wings on each side of the body. You can fasten it with hand.

Apart from the above-mentioned, you can explore more types of nuts here.

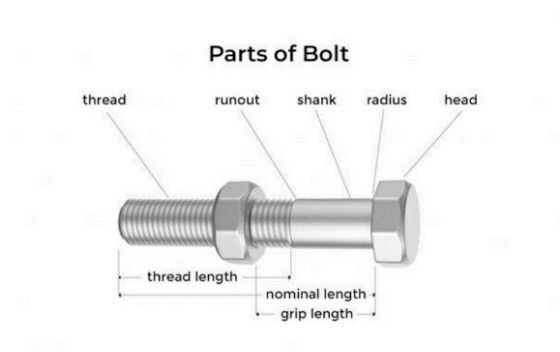
B. Type of Bolts



1. **Eye** – One end of this bolt has a loop. You can attach ropes and slings through this loop. It comes in different sizes.
2. **Round** -It has a round head. It is similar to a carriage bolt, but without the square neck under the head.
3. **Wing** -Wing bolt has a head with wings on each side. Like a wing nut, you can fasten it with hand.
4. **Socket Head** -This bolt has a flat chamfered top surface and knurled cylindrical sides. You can use it for a variety of applications.
5. **Hex** – It has a hexagonal head shape. It comes in different lengths and threading varieties. You need a wrench to install this bolt.

C. Parts of Bolt

- **Thread** – The main purpose of thread is to reduce the friction and stop the wood from splitting when the bolt is being fastened. Also this is part that will accommodate the nut.
- **Runout** – Runout is the part from where the bolt thread converts into shank.
- **Shank** – The part between head and thread is called shank.
- **Head** – This is the upper portion of the bolt that will engage with the tools that are used to tighten them.



Woodworking Process

Now that you have learned about various woodworking essentials, you can learn the process of how to make woodwork. Although intricate and time-consuming, woodworking is rewarding work.

The process usually involves the following steps.

1. Timber Cutting

The first step involved in the woodworking process is cutting the timber into suitable sections. You will need to use machine tools such as band saw, table saw, and thickness planer, among others, during this stage.



Keep the following things in mind while cutting the timber.

- Make the cuts tangential to annual rings and parallel to the medullary rays to get stronger pieces timber.
- Avoid wasting useful timber while cutting and leave some room for shrinkage, squaring, and planning.
- You can cut the timber using ordinary, quarter, tangential, or radial sawing methods.

Remember, however, timber cutting requires skills and practice. So, you need to practice as much as possible.

2. Molding

The cut timber pieces need to be turned into desired shapes before using them in your woodworking project. The molds you want to use will depend on your project.



For example, if you are making a door, you will need the following moldings.

- Astragal – It is a strip of a semicircular cross-section. It covers the gap where doors meet.

- Bolection – It is a decorative molding above or around a panel of the door.
- Casing – It is the frame around the sides of a door.
- Drip Cap – It is an L-shaped flashing placed over the door frame to prevent water from entering the door frame.
- Panel – It has a flat back and raised face, sometimes with intricate carvings. It goes between the stiles and rails that make up the outside frame of a door.
- Stiles and Rails – Stiles are vertical parts, and rails are the horizontal ones fitting around a door panel.
- Frame – You need different molds like head, legs or jambs, a sill or threshold, and door stops to make a frame.

Make sure to prepare a list of molds you will need to make your piece of furniture before starting.

3. Sanding

The next step is sanding. Sanding will help you remove mill marks resulting from the use of different woodworking tools and machines. It can also help you remove any dents or gauges, and result in an elegant surface finish.



In most cases, you can use sandpaper with the right grit that suits the surface of the wood. You can usually get woodworking sandpapers that come in 80, 100, 120, 150, 180, and 220 grit.

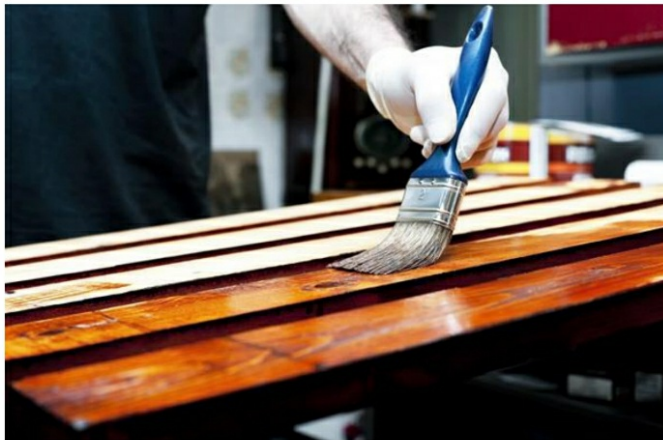
- Usually, 80–100 grit sandpaper is enough to remove mill marks and deep scratches.
- Use 150-grit sandpaper if you are going to stain a piece of wood.
- 220-grit sandpaper is suited for a surface finish without staining.

Alternatively, you can use a random-orbit sander for quick and consistent sanding, especially for larger pieces of wood. Make sure to move the sander in the direction of the grain. Never stop to remove a specific mill mark as it can cause a dip in the piece of wood.

However, you can't use random-orbit sanders for sanding corners or small crevices or intricate carvings. You will need to use sandpaper for sanding such areas and for a final grit.

4. Staining and Dyeing

Both these methods help enhance the aesthetic appeal of the piece of wood. However, they produce different effects.



Staining

Wood stains comprise a pigment, a carrier, and a binder. The pigment lodges into the surface pores of the wood. While the carrier helps the pigment to reach the pore, the binder helps them to adhere to the wooden surface.

Staining not only helps add color to wood but also protects it from environmental damage. Stains are usually more durable, especially oil-based stains, and require less maintenance. However, they require longer dry time, which results in a better finish. Staining can bring out the grain pattern in ash and oak.

Dyeing

A wood dye often comprises a colorant and a solvent. Unlike a stain, a dye can penetrate deep into the wood, and darken its grain. As a result, the process of dyeing often adds vibrant and deep color to the wood.

Dense or figured pieces of wood are more suited for the process of dyeing as wood dyes are more translucent. However, wood dyes tend to fade in sunlight. So, they can't protect the surface of the wood.

5. Assembling

Once you have finished dyeing or staining each component, you have to assemble it. At this stage, you will need to use various fastening materials and tools along with glue to put these pieces together.



- Before gluing or fastening two pieces, dry-fit them first. It will help you make sure the two pieces fit properly.
- Use the appropriate adhesive or glue for joining different parts of the woodwork.
- Use the right clamps to fasten two pieces together while the glue is wet.
- Glue up and assemble the parts in stages. Plan the complete assembly from the beginning.

6. Final Finishing

After assembling all the parts of your woodwork project, the last step is to add a final finish. The purpose of a wood finish is to protect your piece of furniture from moisture, swelling, cracking, stains, and any other environmental damage.



You can find the following types of wood finishes.

- **Oil-Based** – You can use oil finishes like teak oil and linseed oil to add a shine to your woodwork. However, these finishes don't offer much protection.
- **Water-Based** – Less harmful, non-flammable, and environmentally, water-based finishes produce a clear coating. Apply them lightly as they may swell wood fibers sometimes.

- **Varnishes** – Varnishes are of two types, conversion varnish, and polyurethane varnish. Conversion varnish is durable and offers a hard glossy finish. But, you need special equipment and skills to apply it.
- **Polyurethane Varnish** – Although it offers a clear coating, multiple layers can result in a plastic finish. Polyurethane varnish requires a 30-day curing period. It is quite durable.
- **Wax** – It is easy to use. Although the surface gets a nice shine, the wax finish offers minimal protection.
- **Shellac** – A quick-drying surface finish, shellac offers clear or yellowish tint finish. It offers moderate protection against water and alcohol.
- **Nitrocellulose Lacquer** – It is durable and offers good protection. However, it has toxic elements. You have to use a protective mask to avoid inhaling the toxic fumes.

Woodworking Safety Tips

Following necessary safety precautions is one of the most important aspects of woodworking.

As per a report published by the National Electronic Injury Surveillance System, there are more than 100K estimated injuries caused by workshop manual tools in 2018.

To be an efficient woodworking professional, you don't just need woodworking skills and knowledge about various woodworking tools but also need to have an idea about all the woodworking safety tips in order to avoid any fatal injuries during the woodworking process.

Here are some vital woodworking safety tips which you need to follow.

Do's

- Always use safety goggles or a face shield.
- Be sure to wear dust masks whenever required.
- Wear proper clothing that will protect you from sawdust or wayward wood chips.
- Remove any dangling jewelry or clothing accessories.

- Keep all cutting tools and blades clean and sharp so that they can cut through the wood easily.
- Keep electric power cords above the head level or on the floor in a way that there is no tripping hazard.
- Inspect stock for nails, staples, loose knots, or other defects before cutting, planing, routing, or carrying out similar activities.
- Use appropriate clamps to secure all work pieces when drilling, sanding, cutting, or milling.

Don'ts

- Never wear loose clothing, work gloves, neckties, rings, bracelets, or any other jewelry. It can easily get caught in moving parts, causing severe injuries.
- Never try to free a stalled blade while the power is on. Always turn off the power first.
- Do not leave running power or machine tools unattended.
- Do not remove sawdust or cuttings from the cutting head by hand while a machine is running. Turn the machine off, and always use a stick or brush.