

Drilling

Info on using the drills in the workshop.

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What pillar drills do we have in the workshop?

Pillar drills are used to drill holes quickly and accurately in a variety of materials. Depending on the drill bit used they are capable of drilling holes in wood, plastic and metal.

Pillar drills are useful for ensuring you are drilling straight. They are also useful if you need to drill holes in the same place on multiple objects. A jig can be made to hold the material in the same place every time.

We have one Pillar drill available in the 3D workshop. One of the machines is larger allows for drilling of taller and thicker materials. The smaller machine has less power and is better for thinner material and smaller holes.

Handheld drills are also available in the 3D workshop but it takes practice to drill straight holes with these. They are also not suitable for drilling holes about 12mm in diameter or above.



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How do I book the pillar drills?

All students must book a workbench to be in 3D workshop. Booking a workbench for a 3 hour slot gives you a space to work and access to all necessary tools, sundries and equipment with technical supervision and guidance.

You can book a workbench via the [Online Resource Booking \(ORB\)](#).

You must complete an online Health and Safety induction before booking a workbench.



The pillar drill is a yellow machine. This means students can use the equipment but must get staff approval before each use. A member of staff will also supervise.

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What materials can I use with the pillar drills?

The pillar drill is primarily used to drilling holes in wood. It is ideal for [plywood](#) and both hardwood and softwood timber. Never drill MDF (Medium Density Fibreboard) using the pillar drill. It creates fine dust which can cause damage to lungs.

- Drill bits from 0.5mm up to 80mm are available for drilling into wood
- Drill bits made for metal have limited size options.
- Drilling in [acrylic](#) possible but it is likely to cause chips in the material. To drill into acrylic you must start by drilling a small hole. You should then work your way up through different sizes until you reach your desired hole size. It is not possible to drill large holes in acrylic. Laser cutting holes in acrylic is always preferable over drilling.
- Sheet material is ideal for the pillar drill. It is possible to drill into round and irregular shaped material, such as tree branches, but care must be taken. You might need to clamp the material down or it may be necessary to make a jig to hold the object. This will stop the drill bit pulling the object out of your hand or pulling your hand into the drill.

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How do the pillar drills work?

Our Pillar Drills is a free standing machine. It uses a motor to rotate a drill bit, which is attached to a sliding column. The drill bit is held in place with a set of clamping teeth call the chuck. You can tighten the chuck with a tool called the chuck key. The sliding column is moved up and down by loosening the screw to the right of the machine and sliding the table up or down, then thighten to screw again to hold the table in place. The table of the pillar drill is locked in place, it is always the drill bit that moves.

The majority of the mechanism is enclosed for safety. The drill bit should be covered by the adjustable guard when in use.

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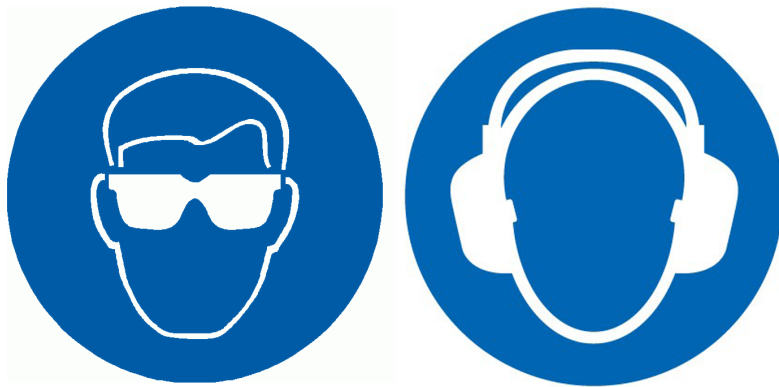
How do I use the pillar drill?

- Ensure you are wearing correct [PPE](#) as listed below.
- Choose the appropriate size drill bit and mark the position of your holes.
- Insert your drill bit into the chuck. Ensure the chuck is tight by using the chuck key.
- Place your material on the table of the pillar drill. Hold the material flat against the table and clamp to the table if necessary. A jig may be required for irregular shaped objects.
- Ensure the guards are covering as much of the drill bit as possible.
- It is good practice to check the emergency stop before use.
- Start the machine and allow the machine to reach full speed.
- Use the handle on the righthand side of the machine to lower the drill bit into and through the material. The speed at which you lower the drill bit will depend on the material and size of the drill bit. You may need to lower and raise the drill bit multiple times to get through the material fully.
- Never blow the dust away from your piece. This will cause settled dust to move into the air, making it more likely to be inhaled. There is a Hoover available to clean.
- When finished stop the machine and allow the bit to come to a full stop.
- Ensure you leave the machine clean and tidy.

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What Personal Protective Equipment (PPE) do I need to use the pillar drills?



You must wear safety glasses and ear defenders when using this machine. Tie back any long hair and tuck in loose clothing.

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