

Panel saw

Background

The panel saw or sliding table saw is a circular saw which is equipped to make it easy to saw solid timber and engineered wood to specified dimensions and angles with high precision. Part of the panel saw, the sliding table, is used to move the workpiece towards and past the saw blade in a controlled way. The table dimensions mean you can comfortably saw engineered wood of standard sizes.

The machine is suitable for sawing to size engineered wood (laminated, edge-glued, etc.) and planed solid timber, and for preparing certain joints such as mitres. The saw can be used to create straight or angled grooves in the stock and to machine cut-outs for halving joints of various kinds.

You may have difficulty sawing very small parts and there may be safety issues unless you use clamping devices or fixtures.

You should avoid cutting raw planks because the blade used in the panel saw is not designed for them and the machine itself is not suitably equipped.

Machine structure

The panel saw consists of the following parts.

Saw blade

The saw blade can be adjusted up and down and set at an angle (tilted) 0° – 45° . The saw blade is secured to the spindle by means of two flat metal disks, the blade flanges, which press against the blade on both sides, and a bolt or nut.

Riving knife

The riving knife behind the saw blade is there mainly to stop the workpiece binding the upwards-running saw blade teeth and being violently ejected towards the operator – a phenomenon called kickback. The riving knife therefore prevents the stock or the operator coming into contact with the blade. The riving knife must be adjusted to the saw blade diameter. It must also be thicker than the body of the saw blade but thinner than the width of cut.

Rip table

The rip table is the fixed part of the saw table. It usually has an extension to make it easier to handle large workpieces. The part of the rip table closest to the saw blade is the table insert, which is designed to be easily replaced and is made of a material which is easy to cut.

Stop and think!

The opening between the saw blade and the table insert must be as small as possible to reduce the risk of chipping and vibrations especially with thin stock.

Overhead guard

The overhead guard has an extractor and a holder for the push stick.

Emergency stop

The emergency stop must be easy to access and protected from accidental use. It must be designed as a red mushroom button with a yellow background.

Control panel

The control panel contains the start and stop function and the controls to adjust the saw blade height and angle. You can sometimes also set the spindle speed from the control panel.

Frame

The frame is the base of the machine, to which the other parts are attached. In all modern machines, the frame is made of welded steel sections and panels.

Saw unit

The part of the panel saw where the saw blade is attached and driven is called the saw unit. The saw unit is suspended from the frame and consists of a spindle with belt pulley, a clamping device to secure the saw blade, the transmission and speed adjustment (if present) and an electric three-phase drive motor.

The spindle speed is normally between 4000 and 5000 rpm and often needs to be changed to match the saw blade diameter. The power of the motor is between 3 and 8 kW.

The saw unit also contains devices allowing you to change the saw blade height and angle in relation to the table. Modern panel saws offer motorized adjustment with some kind of digital scale that you set manually.

Stop and think!

Certain saws can automatically set the saw height, the horizontal and vertical angle, and the stops on the angle fence and rip fence, etc.

Rip fence

The rip fence is fitted to the infeed side of the fixed table parallel to the saw blade. The rip fence has a scale to set the width. It allows fine adjustment and the setting can be locked.

Sliding table

The sliding table is the moving part of the saw table, and is used to guide and support the workpiece.

Crosscut fence

The crosscut fence is attached to the sliding table at right angles to the saw blade in the initial setting. The angle can be tilted $\pm 50^\circ$ using a scale or in preset positions. The crosscut fence also has a scale and a stop for the workpiece for length adjustment.

Separate stand for long workpieces

The stand is set to the same height as the saw tables and prevents long workpieces falling.

Low fence

The low fence helps you use the overhead guard correctly when sawing small workpieces. The low fence is much lower than the standard rip fence, making it easier to use a push stick.

Push stick

The push stick lets you cut small and narrow workpieces without getting your hands too close to the saw blade. It must be made of a material that cannot damage the saw blade.

Diverter

The diverter is a wedge shaped device attached to the rip table by means of magnets. If it is long enough it can be fixed to the edge of the table with a vice. The diverter keeps offcuts away from the parts of the saw blade moving upwards and forwards, so they are less likely to be thrown out and hit you.

Scoring blade

The saw may have a scoring blade, which is mainly used for sawing laminates or veneers. The scoring blade is situated in front of the saw blade, cutting a shallow groove into the underside of the stock just before the main blade saws through it. The scoring blade is designed to prevent tear-out on the underside of the material. It rotates in the direction of feed, in other words contrary to the main blade.

Select the tool

The tool of the panel saw – the saw blade – is available in many different shapes and sizes depending on what you want to cut and how, and on the required quality of the cut finish. As a general rule, the more teeth the saw blade has, the better the finish. The most common type of tool is hard metal tipped with brazed teeth.

You can sometimes fit a milling cutter to the spindle to mill grooves in wide workpieces.

Assembling the machine

The machine must be assembled and set up according to the manufacturer's instructions if they are available. Generally, the floor must be flat and sufficiently stable for the size of the machine, and the machine must be positioned where it can be safely connected to the power supply. Panel saws are sometimes very large machines that normally also require plenty of space around them where you can manipulate the stock. You should set up the saw so the moving parts are never able to stick out where people or vehicles circulate.

Stop and think!

Mark out the working area of the machine on the floor.