

Wide belt sander

Background

The wide belt sander is used to sand engineered wood, veneer, laminate, plastics and solid timber down to a specified thickness, leaving a smooth and even surface. You can choose whether to remove material or simply sand the surface. The wide belt sander is a high-precision tool, able to work to an accuracy of one tenth of a millimetre.

You introduce the workpiece from the infeed side of the machine. After passing under the sanding rollers, the sanded workpiece exits on the outfeed side. The machine is normally fully enclosed so you cannot come into contact with dangerous parts.

Sanding is a very energy-intensive way of removing material, so you should only take off a few tenths of a millimetre on each pass, especially when sanding a large area.

The wide belt sander can be used to sand workpieces between 3 and 200 mm in thickness and between 800 and 1500 in width.

Stop and think!

The machine must not be used to sand workpieces containing metal, particularly ferrous metals which can cause sparks, fire and dust explosion.

Machine structure

The wide belt sander consists of a frame, a height adjustable table and one or more sanding stations permanently fixed above the table.

Table

You can raise or lower the table with a motor in order determine the sanding depth.

Feed belt

The feed belt – a wide conveyor belt made of synthetic rubber – runs over the table, carrying the workpiece through the machine.

Sanding belts

The sanding stations consist of a wide loop of sandpaper running over two or more rollers. The loop of sandpaper is called the sanding belt and is the tool that removes the material.

Sanding belts move against the feed direction. The belt also oscillates sideways to avoid scratches on the finished surface. The oscillation and the belt tension are controlled with compressed air. The sanding belt speed can vary between 2 and 20 m/second, and the speed at which the workpiece passes through the machine – the feed rate – can vary between 2 and 20 m/minute. Compressed air is blown onto the sanding surface to keep it clear of dust.

Sanding stations

The sanding stations are driven by powerful electric motors and each one has a different job to do. The first sanding station from the infeed side is designed to remove material with coarse sandpaper and to make the workpiece an even thickness. The next sanding station smooths the surface with finer sandpaper. The fine sanding station usually has a platen which pushes the sandpaper down onto the workpiece for a smoother surface.

The wide belt sander generates a lot of dust and requires effective extraction. Each sanding station has nozzles that blow dust off the sanding belts and an extractor to carry it away.

Rollers and platens

There are rollers between the sanding stations to press the workpiece down against the conveyor belt on the table. The distance between the rollers determines the minimum length of workpiece the machine can handle – workpieces can go out of line if they are too short, damaging the sanding belt and the machine. Many different type of roller and platen are available for special purposes, for example sanding painted surfaces.

Measuring unit

Some machines have a measuring unit which you can use to measure the workpiece before sanding and automatically adjust the sanding depth.

Inspection hatches

The machine is fully enclosed, with an interlocked guard on the infeed side to prevent contact with the sanding rollers. Inspection hatches are provided, which you can open to change the belt, clean up or service the machine. All hatches must be interlocked, in other words the machine must stop and cannot be restarted if a hatch is open.

Operation

The machine has a control panel, where you can set the sanding depth, the type of sanding and the feed rate. To set the sanding depth you raise or lower the table. To help you, there is a digital scale showing tenths of a millimetre.

The type of sanding is determined by which rollers and platens are activated, and the feed rate must be set according to the stock and the sanding depth. You can control the feed rate either digitally from the control panel or by adjusting the feed motor directly. There is also a control for compressed air cleaning of the sanding belt.

It is important to always go from a larger dimension to a smaller one when you adjust the machine in order to avoid slack in the mechanism that raises and lowers the table.

Some machines are equipped with a device which measures the load on the motors. It can be used to decide if the machine is about to be overloaded.

The tool

In a wide belt sander, the material is removed by a belt of strong paper coated in a layer of abrasive particles glued onto the surface. The abrasive particles consist of a

hard mineral with sharp edges such as aluminium oxide. The ability of the sandpaper to remove material depends on the grit size. The sandpaper is graded according to the grit size – 60 grade is coarse and 150 grade is fine. Grit sizes of between 40 and 800 are available. The terms grade, coarseness and grit size are interchangeable.

Sanding belts have a join, and to avoid breaks they must be installed with the correct direction of rotation. Belts usually have printed arrows on the inside to indicate the direction of rotation.

Stop and think!

Sanding belts must be handled with care to avoid tears at the edges, which may cause the belt to break. Belts should be stored hanging up, at normal humidity and room temperature.

The abrasive particles lose their sharp edges after a period of use, creating a poor finish, putting the machine under additional load and generating excess heat. This excess heat causes the dust from sanding to stick to the belt surface, leaving marks in the sanded surface. If the belt is worn, it can potentially break and damage the machine as well as the workpiece.