

USER REPORT

Photo.1: The SawStop Cabinet Saw with larger extension table and 52" rails

The good news is that the SawStop safety feature is now available in Australia. The really good news is that it is fitted to a machine worth having for its cutting performance alone.

The Sawstop was invented by an American, Stephen Gass, and presented to the market around seven years ago. It was developed to eliminate the majority of table saw injuries.

At the time Stephen hoped that table saw manufacturers would fit the SawStop to their new models (the system cannot be retrofitted). He claimed that the extra cost would be modest. However no manufacturers took up the option.

Finally, having exhausted all other avenues, Steve founded SawStop to manufacture machines fitted with his safety feature.

The Cabinet Saw

The company's first model is the 254mm dia. cabinet saw which was released in December 2004. Since then well over 6000 units have been sold.

This is a heftier machine in almost every way than its competitors. This may be due to the extra forces the components experience when the SawStop cartridge fires, the manufacturer's desire to build a stand-out model that didn't rely on safety alone or a combination of both.

Imported into Australia by Gabbett Machinery, the SawStop machine is available with a single phase 3HP motor or three-phase 5HP motor. It is also available with a fence and 36" (914mm) rails or 52" (1320mm) rails (Photo.1). The machine has overall dimensions of 1760mm x 864mm x 864mm high and 2165mm x 864mm x 864mm respectively.

The basic machine without the exten-

sion table weighs around 118kgs. If you have to move it on occasion you'll be pleased to know that there is a mobile base fitted with hydraulic lift specifically manufactured for this model (see Product News this issue).

The weight comes from the extra metal used to produce the machine and is evident in everything from the large diameter arbor to the bigger bearings to the solid fence. In a world where so much seems to be made lighter and flimsier than the previous model, the SawStop is a welcome return to heavy duty construction.

Cutting

At the front is a large control machine fitted with main on/off switch and an oversized on/off paddle switch (Photo.3) as well as other controls we'll come to when discussing the SawStop feature.

To the right is the handwheel which adjusts the tilt of the blade from 0° to 45°. The saw mechanism is balanced so that the wheel spins effortlessly to both left and right. A central knob locks in the desired setting and a large indicator makes it easy to read the angle of tilt.

To the left on the side of the cabinet is the handwheel for the blade rise and fall. The heavy duty drive mechanism plus the SawStop components make the movable section considerably heavier than similar saws. To overcome resistance when raising the blade, the unit is fitted with a gas strut for assistance. The result is that the handwheel is effortless to use for both



SawStop 254mm Cabinet Saw

by Stuart Duffy



Photo.3: Dust connection at the rear

Photo.2: From left to right, the rise and fall handwheel, control box and tilt handwheel





Photo.4: Large access doors on both sides of the cabinet housing are a welcome feature

raising and lowering operations. Again a central knob locks in the setting.

At the back is a 4" (100mm) dust port (Photo.2) which is connected to a shroud around the base of the blade for very efficient dust collection. Large access doors on both sides of the cabinet (Photo.4) make a variety of maintenance tasks easier including cleaning out the dust that inevitably makes its way to the base of the machine.

For ease of use the fence locks only onto a front rail, but its heavy construction, positive locking and the use of guide plates ensures there is no discernible movement in the fence when the saw is in operation. The measure on either side of the blade is in both Metric and Imperial units and allows for adjustment of the fence up to 555mm left of the blade, 1580mm to the right (on the larger extension table).

A good quality blade is provided with the machine, but if you have specific needs, there are few direct replacements to choose from due to the 5/8" (16mm) arbor. Gabbett Machinery recommend sourcing your favourite blade with a 25mm bore and bushing it to suit the 5/8" arbor.

The machine comes standard with a zero clearance insert. Of particular interest is that the insert is 115mm wide, enabling good access down both sides of the blade. This simplifies tasks such as blade changing but it is also a byproduct of the StopSaw design as a large opening is necessary to be able to release the blade and the aluminium brake block after the safety cartridge has fired. The blade is changed with two large spanners, removing the requirement to hold or lock the blade with one hand.

The riving knife and low profile clear blade guard (Photo.5) use the same quick change mount. Making conventional safety features such as these easier to use and therefore more likely to be kept functional rather than removed was part of the brief for the SawStop machine's design.

An accurate mitre gauge is supplied with the machine and is stored on the



Photo.5: Low profile transparent blade guard attached to a quick-change mount

outer face of the righthand cabinet access door.

The machined cast iron work table is larger than comparable models and the drive system uses multi-V-ribbed belts instead of V-belts for better power transfer and greater reliability.

The colour manual thoroughly covers all aspects of setting up, using and adjusting the saw with text and photographs. Purchasers receive a copy with the machine, but you can also view it at www.sawstop.com.

In operation the saw runs as good as it looks. It is easy to adjust and cuts cleanly and accurately. The heavy duty construction is ideally suited to our native hardwoods.

What is SawStop?

The concept of SawStop is that it will cut timber but not your fingers. To make it

Photo.6: The SawStop cartridge in position



work, there is a 3V current applied to the blade. The current is constantly monitored for any loss.

Things that have capacitance, ie. take up charge, such as metal and the human body, cause a loss of current from the blade when they come in contact with it. The SawStop cartridge fires, locking the blade and minimising injury to the operator.

The operation of the SawStop is as follows. The electronics module detects a loss of current as two teeth pass through the material. A charge is fired in the brake cartridge (Photo.6).

Fortunately the charge isn't a big bang (this reviewer was prepared to have a change of clothes after the demonstration if it was), more like a thud. The reason for this is that the charge does no more than destroy the retainer on a spring in the module.

It is the sudden release of the spring that drives the sacrificial aluminium block into the teeth of the blade, stopping it almost instantaneously (Photo.7).

The jolt to the blade releases a catch on the rise and fall mechanism, causing the blade assembly to fall under its own (considerable) weight to the bottom of its travel.

The net effect of all this is that you are cutting a board, the blade makes contact with something it shouldn't (SawStop and Gabbett like to use sausages instead of human bits for the demonstrations), there is a thud and the blade vanishes. The manufacturers claim that the whole process takes five thousandths of a second.

If you accidentally run your fingers into the blade, you will injure yourself. One American reviewer cites a depth of cut of 1.6mm if you are feeding the material at 190mm/second. Double the speed and double the depth of cut. However with the SawStop we are talking of stitches to a superficial wound, not microsurgery to reconnect severed fingers (where feasible).

To view a short video clip on the

Photo.7: A 'used' cartridge. The charge releases the spring which then rams the aluminium block into the blade. The distortion around the pivot point is intentional as it absorbs some of the centrifugal force of the blade



SawStop safety feature in action, visit www.skillspublish.com and click on this issue (AWW #138). You will also be able to watch the SawStop being demonstrated on the Gabbett Machinery Stand at all of this year's Timber & Working with Wood Shows.

You've saved your fingers, perhaps even your life, but inevitably it comes at a cost. The SawStop module costs around \$100 to replace though the manufacturers are currently offering to replace it for free to anyone who allows their story to be used for promotional purposes.

The blade is also ruined. So, depending on the cost of the blade, firing the module may cost you a few hundred dollars, but if it's prevented serious injury, it's worth every cent.

It takes only a few minutes to remove the used cartridge and fit a new cartridge and blade. The work doesn't require special tools or a trained technician — it can be done by the operator.

A separate cartridge is available for use with 203mm (8") dado sets.

Operating with SawStop

SawStop does not replace standard safe working procedures. If you are at risk of setting off the brake cartridge on a regular basis, you need to undergo safety training or give up woodworking. SawStop is for those rare moments in the workshop when things go wrong when they shouldn't have.

Let's go back to the front control panel. The main on/off switch has a red safety insert or Lockout Key. Remove the insert and the switch no longer works — this prevents the machine from being operated by unauthorised personnel.

When making a cut, turn the machine on and off with the paddle switch. You can turn the switch off with your hand or knee, whichever you prefer.

There is a key switch on the right side of the control panel. This turns the SawStop feature on and off and prevents unauthorised switching off of the SawStop.

On the front of the panel are two lights, green and red, to provide information relating to the SawStop. When the system is ready for operation the green light is lit and the red one unlit.

When the system is in Bypass Mode, the green light is flashing and the red one unlit.

The system constantly monitors itself and if there is a fault it shuts the machine down. There are 12 different codes indicated by these lights which are explained in the operator's manual.

In some industries it is necessary to cut both aluminium and timber. Since the aluminium is conductive it will activate the SawStop cartridge. *The SawStop feature cannot be used when cutting metal.* To enable the one machine to be used for both tasks, the SawStop saw can be operated in ByPass Mode by turning the key switch mentioned earlier.

Recycled wood can also trigger the SawStop if a nail or other embedded metal object bridges the gap between the blade and the worktable. A nail buried in the timber won't set off the cartridge. In this instance careful examination of the exterior of the timber to be cut will eliminate the risk. The nails aren't too good for the saw blade either!

Green timber has a higher moisture content than seasoned material and can be wet enough to fire the SawStop. In this case, the recommended procedure is to run a few boards through the machine in Bypass Mode. A flashing red light will indicate if the sensors were activated during cutting.

In the standard System On Mode, green timber can also activate an

Overload Due to Wet Wood condition. The green light is unlit, the red light flashing and the motor has been automatically turned off. Wet wood not only increases the risk of accidental misfire, but also interferes with the systems' ability to detect contact. The saw must then be operated in Bypass Mode and accordingly the operator must be more vigilant, recognising that the Sawstop safety feature is not present.

Points to Consider

Current pricing for the 3HP SawStop Cabinet Saw is \$4900 + GST for the unit with the smaller extension table, \$5000 + GST for the larger unit.

It's not a cheap machine but you do get a lot of saw for your money, even without factoring in the SawStop feature. It is a heavy duty well-built machine that is equally at home in a keen hobbyist's workshop and a professional cabinet shop.

You only need to activate the SawStop feature once and you'll have justified its purchase. For production shops and educational institutions, the safety advantages of the SawStop ensure that it will be on the short list for consideration whenever a table saw is purchased.

Currently a StopSaw contractor's saw is in development and the company expects to apply the technology in the future to other machines such as bandsaws.

For further information on the SawStop Cabinet Saw, contact Gabbett Machinery Pty Ltd:

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www.gabbett.com/msawstop.htm.

