



WCMS's MACHINES: SAWSTOP

SawStop is a table saw that features a patented automatic braking system that stops the blade upon contact. The manufacturer claims that the saw stops in less than five milliseconds, and angular momentum retracts the blade into the table. The operator suffers a minor instead of serious injury. The design takes advantage of the difference in conductance and capacitance, between wood and flesh.

An oscillator generates a pulsed electrical signal, and if a human contacts the blade, the signal will fall below the threshold. After signal loss for 25 micro seconds (μs), the detector will fire. A tooth on a 10-inch circular blade rotating at 4000 RPM will stay in contact with the approximate width of a fingertip for 100 μs . When the brake activates, a spring pushes an aluminum block into the blade. The block is normally held away from the blade by a wire, but during braking, an electric current instantly melts the wire, similar to a fuse blowing.



A "blown" cartridge

According to the manufacturers, the system has restrictions and limitations, including (but not only) that the system activates if when cutting very green or wet timber, or if the blade comes into vicinity of metal, and activating the braking system damages the blade, both the activating cartridge and the cutting blade need replacing. It is also prone to false activation, but the benefits of the saw well outweigh this element.

Steve Gass, a patent attorney and amateur woodworker with a doctorate in physics, came up with the idea for SawStop's braking system in 1999. After numerous tests using a hot dog as a finger-analog, in spring 2000, Gass conducted the first test with a real human finger, the blade stopped as designed, and although it "hurt like the dickens and bled a lot," his finger remained intact.

When used in accordance with the manufacturer's specifications, and the Waverley Shed advisory on the use of this saw, it is a very valuable asset and is likely (and may already have) saved Shed members from being seriously injured and maimed.

Training for the use of the SawStop is available to all members by the Technical Advisors and certification to allow use of the saw is only to be carried out by the Machinery Advisors. If you wish to be trained in the use of the machine, please make arrangements with the Technical Supervisors, but please be patient and allow the Supervisors to carry out their own work.



ADJUSTING THE BLADE HEIGHT

Following a discussion among Supervisors and members recently as to adjusting the blade height on the SawStop, we have consulted the SawStop manual.

On page 42 it says:

"To maximize safety, the height of the saw blade above the table should be as low as possible while still allowing a complete and precise cut. For through-cuts (i.e., cuts where the wood is cut through its entire thickness), the blade height should be adjusted so that the top of the blade is no more than 1/8 inch (about 6mm) to 1/2 inch (about 12mm) above the workpiece. "

"CAUTION! When adjusting the height or tilt angle of the blade, reverse the handwheel slightly to release tension after reaching the limit stops. This prevents any slight twisting of the cast iron assembly that might affect blade alignment. "

Thank you for the research, Colin Lipworth

