

TABLE AND PANEL SAW SAFEGUARDING BASICS — AN EMPLOYER’S GUIDE TO PREPARING THE SHOP

About this document

This how-to guide is intended as a companion to the *Safeguarding Table and Panel Saws* documents in the Crew Talk series. These documents are available online at WorkSafeBC.com and have been produced in partnership with the Architectural Woodwork Manufacturers Association (AWMA), B.C. Chapter.

This guide will help employers in the woodworking industry understand what is required to comply with the Occupational Health and Safety Regulation with respect to point of operation safeguarding on table and panel saws. You are encouraged to view the slide show *Guarding for Woodworking* at WorkSafeBC.com before reading this document.

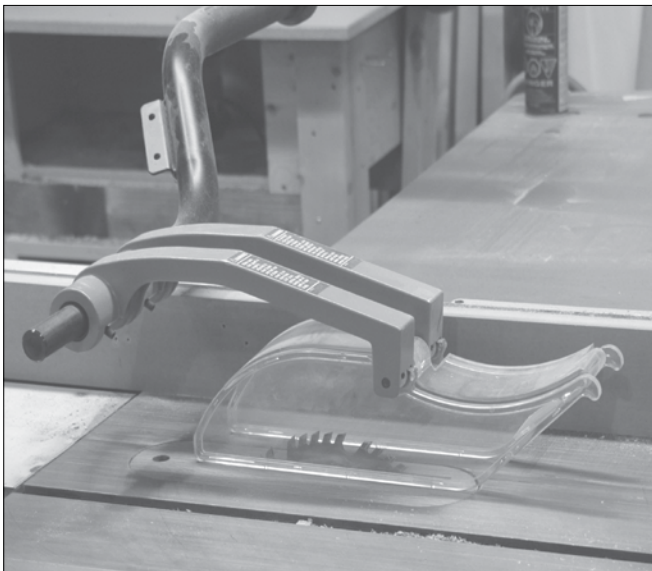


Table saw with self-adjusting guard.

A risky business

Woodworking is inherently dangerous. This is due to the nature of the work processes used to cut, form, and shape wood and composite materials. Most of the work is done using sharp edge tools such as circular saw blades, knife heads, cutting heads, and other tools that turn at very high speeds. These tools are capable of inflicting, in less than a blink of an eye, serious and disabling injuries — operator contact with these tools is a virtual guarantee of serious injury.

In the woodworking shop, table saws are by far the most common piece of equipment involved when a serious accident occurs. Because most of these saws are hand fed and used to cut materials of varying dimensions, the operator’s hands frequently pass in close proximity to the blade during the cutting process. When you combine an unguarded 10" circular saw blade turning at approximately 225 km/h with a worker’s hands moving within inches of the blade, the potential for serious injury is substantial. Effective point of operation safeguarding must be used to reduce the risk of injury to the operator.

Six key requirements

There are six key requirements in the OHS Regulation that apply to point of operation safeguarding and the associated safety devices required for use with this type of equipment. These requirements are reprinted on the next page.

12.2 Safeguarding requirement

Unless elsewhere provided for in this Occupational Health and Safety Regulation, the employer must ensure that machinery and equipment is fitted with adequate safeguards which

- (a) protect a worker from contact with hazardous power transmission parts,
- (b) ensure that a worker cannot access a hazardous point of operation, and
- (c) safely contain any material ejected by the work process which could be hazardous to a worker.

12.3 Standards

The application, design, construction and use of safeguards, including an opening in a guard and the reach distance to a hazardous part, must meet the requirements of *CSA Standard Z432-94, Safeguarding of Machinery*.

12.4 Effectiveness of safeguards

A safeguard must be capable of effectively performing its intended function.

12.58 Hand feeding

A template, jig, or pushstick must be used if there is a risk of injury to a worker's hands when feeding woodworking machinery.

12.59 Removing guards

- (1) If the use of a guard on woodworking machinery is clearly impracticable for a specific operation, the guard may be removed, but an appropriate pushstick, jig, feather board or similar device must be used to prevent the operator encroaching into the cutting area, and upon completion of the operation the guard must be replaced.
- (2) A guard may otherwise only be removed if the guard itself creates a hazard, or if its removal is necessary for maintenance.

12.60 Kickback fingers, splitters and spreaders

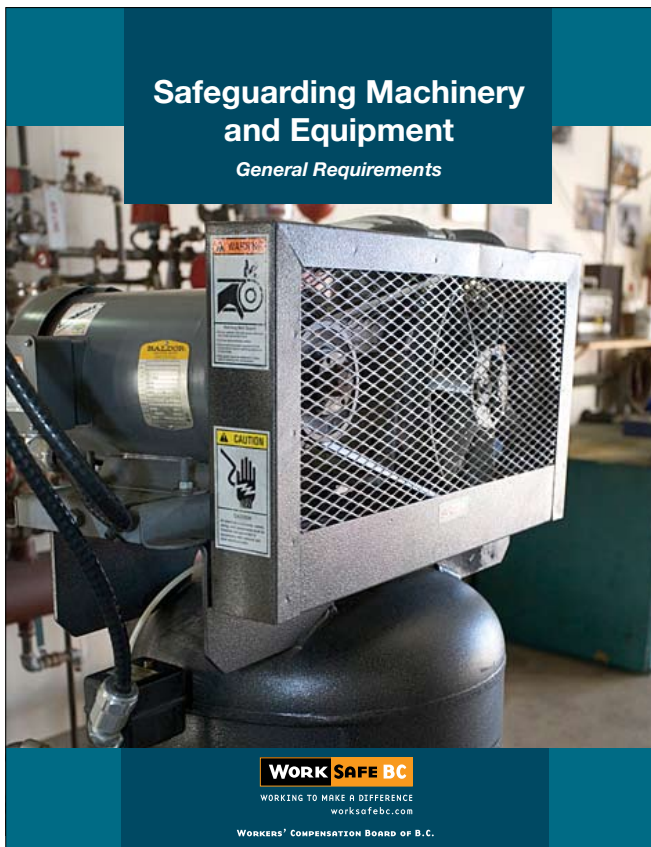
- (1) Except as provided in subsection (2), a hand-fed circular saw with rip-type teeth must have kickback fingers and a splitter or spreader designed to prevent kickback.
- (2) Kickback fingers, splitters or spreaders are not required when grooving, dadoing or rabbeting.



Safeguarding the point of operation

The WorkSafeBC manual *Safeguarding Machinery and Equipment: General Requirements* defines a *safeguard* as “a solution or a combination of solutions that eliminate or reduce the risk of exposure to hazardous moving parts or other harmful conditions.”

The point of operation is where the work piece is cut, formed, or shaped by the tool (for example, the saw blade or knife head). In practice, safeguarding the point of operation often requires a combination of solutions. For table and panel saws, this means the use of blade guards and safety devices such as push sticks and jigs, plus possibly warning signs.



For more information, refer to the booklet Safeguarding Machinery and Equipment: General Requirements. Visit WorkSafeBC.com to download this booklet for free or to purchase a hard copy.

Types of guards

Most guards for table and panel saws fall into two basic categories:

- the widely used traditional-style guards that mount on the saw’s trunnion assembly
- the over-arm style guards that mount on the extension table

Guard characteristics

Both types of guards are effective, but each design has different characteristics that may be of differing importance to you, depending on how you use your saws. For example, one very common style of guard mounts on the saw’s trunnion assembly and moves with the blade as it is tilted, so the side-shield assemblies tend to be narrower than those on over-arm style guards, which must be wide enough to provide adequate blade clearance when the blade is tilted. In general, the narrower the guard the better, as there is less access to the point of operation.

Another characteristic to consider is whether the guard self-adjusts for different material thicknesses. Guards that do not have this feature must be adjusted manually by the operator. This is important, because the guard is not effective if it is positioned 2" above the top of the work piece, which allows ample room for the operator’s hands to contact the blade.

The most common style of guard incorporates an integral splitter and anti-kickback fingers, which are required when using saw blades with rip-type teeth, such as a 10" x 24" tooth blade used to rip solid wood. Because these saw blades are more likely to grab the work piece and propel it back toward the operator, these added safety devices are required.

Over-arm style guards do not incorporate these features; they must be added to the saw separately. Although it is not a safeguarding feature, some over-arm guard designs provide the added benefit of an integral dust-collection pickup. When removal of the guard is required, over-arm guards are usually easier to remove and replace.

A well-designed point of operation guard system should:

- reduce the risk of injury from contact with the saw's point of operation
- accommodate a wide range of cutting operations
- be minimally intrusive to the cutting process

Removing the guard

Blade guards on table saws, and to a much lesser degree panel saws, cannot be used in every circumstance. The OHS Regulation allows for the temporary removal of the guard, where its use is impracticable or where the guard itself creates a hazard. The term *impracticable* means "that which is not reasonably capable of being done." Impracticable does not mean inconvenient; there should be few situations where it is impracticable to use the guard.

In some cases, however, the guard may physically obstruct the cutting process (for example, when cutting dados or narrow pieces of material). In these cases, the guard may be temporarily removed, but another safety device (or devices) must be used, such as a push stick, push block, feather board, or similar device. Note that the operator's hands are not an acceptable alternative to a push stick, push block, or similar device. Replace the guard once that cutting operation is completed.

Panel saws

Although panel and table saws both have the same safeguarding requirements, they are intended for different applications. Panel saws are most often used for cutting large composite panels using the sliding table, while table saws are used for a wide range of general cutting applications. The difference is significant, largely because the design and use of a panel saw means that the operator's hands are usually well away from the blade, reducing the risk of injury. This is one of the main reasons why there are far fewer injuries involving panel saws than table saws.

Safe work practices

A guard alone is not a guarantee against injury. Operators must also use safe work practices. The following are examples of what to consider when developing safe work practices for your table and panel saws.

Guard height

For guards that do not self-adjust to the material height, make sure there is minimal clearance between the guard and the top of the material. This helps to maintain the effectiveness of the guard.

Blade height

It is not uncommon for the operator to set the saw blade far higher than it needs to be. The gullet on the blade is designed to clear waste material, and the blade will function effectively with the blade height set so the bottom of the gullet clears the top of the material by no more than ¼". Setting the blade higher than that only increases the risk of injury to the operator.

Hand position

Even with the guard in place, it is possible for the operator to be seriously injured. There is always some risk of injury to a worker's hands when hand feeding the saw, so determine safe hand positions for different applications, and make the use of push sticks or other safety devices mandatory.

Removing the guard

The guard belongs on the saw and in use, except in infrequent circumstances where its removal is necessary for a specific cutting operation. Determine when and under what conditions the guard may be removed, and specify the safety devices that must be used during that cutting operation. The vast majority of amputation injuries involving table saws occur on saws that are not equipped with point of operation safeguarding.

