

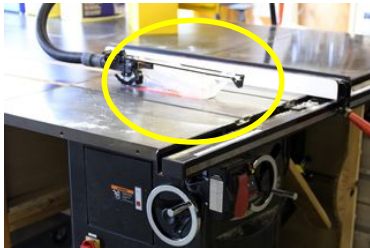
## Machine and Equipment Guarding Reference Guide

The following are general requirements for machine and equipment guarding. Guarding can in some cases be accomplished by utilizing different methods. This reference guide is NOT all-inclusive. Please consult RMS (1-5037) for additional information or support.

Guarding Requirements – these must be guarded!

**Point of Operation** – this is the area where the machine performs work, such as cutting, shaping, boring, or forming of stock

**Guarded**



**Not Guarded**



**Power Transmission Devices** – these are the components of the mechanical system which transmit energy to the part of the machine performing the work. These include flywheels, pulleys, belts, connecting rods, couplings, cams, spindles, chains, cranks, and gears.

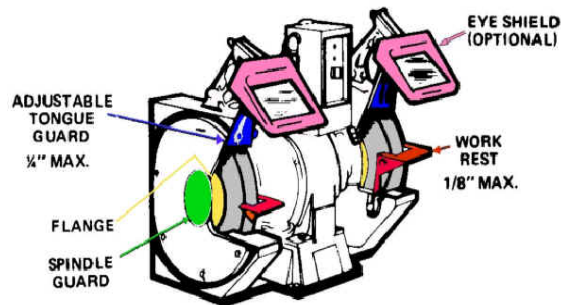
**Guarded**



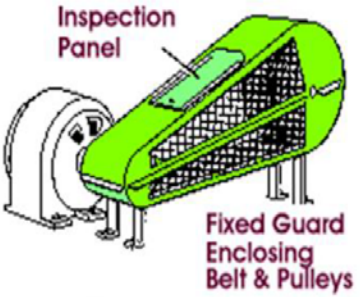
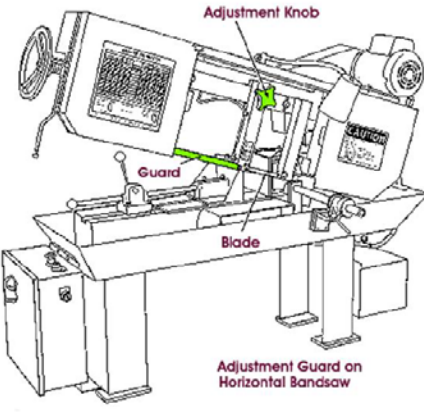
**Not Guarded**

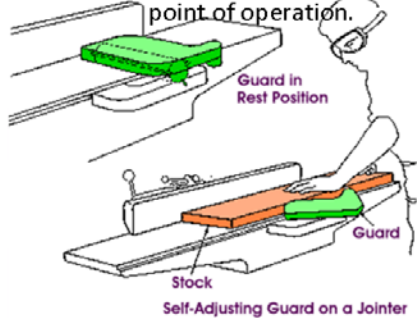


**Bench and Pedestal Grinders** – the adjustable tongue guard must be  $\frac{1}{4}$ " from the wheel and the adjustable work rest must be  $\frac{1}{8}$ " from the wheel. The grinders must be secured either to the bench or floor to prevent them from moving during work. A tool rest is not required when using a wire brush, the tongue guard is required. Dress the grinding wheel to prevent a ridge. Conduct [ring test](#) prior to mounting a new wheel. Never use a cracked grinding wheel.



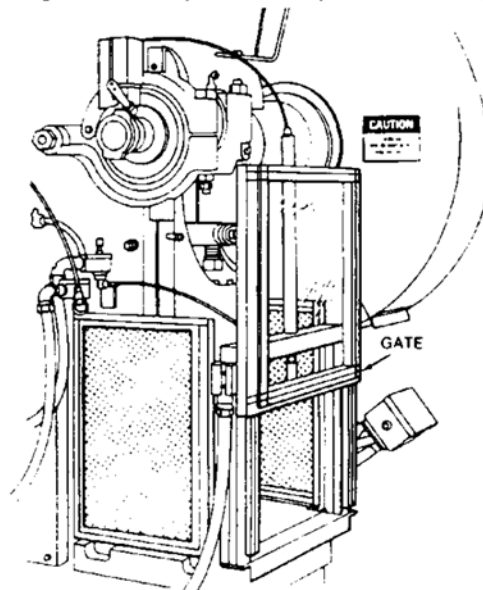
**Types of Machine Guards:**

Type	Safeguard Action	Advantages	Limitations	Examples
Fixed	Provides a barrier and is a permanent part of machine. 	Can be constructed to suit many specific applications. Can provide Maximum protection. Usually requires little maintenance. Suitable to high production, repetitive operations.	May interfere with visibility. Machine adjustment and repair often require removal of guard. Other means of protecting maintenance personnel often required (i.e., lockout)	For use on: In-running rolls. Belts and Pulleys Power transmission apparatus. Cutting Heads of Planers and other automatic-feed equipment
Adjustable	Provides a barrier that may be adjusted to facilitate a variety of production operations. 	Can be constructed to suit many specific applications. Can be adjusted to admit varying sizes of stock.	Hands may enter danger area. Protection may not be complete at all times. May require frequent maintenance or adjustment. Operator may make guard ineffective. May interfere with visibility.	Used on woodworking machinery, such as: Table saws Routers. Shapers. Band saws

Self-adjusting	<p>Provides a barrier that moves according to the size of the stock entering the point of operation. Guard is in place when machine is at rest. Guard pushes away when worker moves stock into point of operation.</p>	<p>Off-the-shelf guards are often commercially available. Do not require manual adjustments.</p>	<p>Does not provide maximum protection. May interfere with visibility. May require frequent maintenance and adjustment.</p>	<p>Used on woodworking machinery, such as: Table saws Radial saws Band saws Jointers</p>
		<p>Source and for more information: Adapted from <i>Concepts and Techniques of Machine Safeguarding</i>, U.S. Department of Labor, OSHA- <a href="https://www.osha.gov/Publications/Mach_SafeGuard/toc.html">https://www.osha.gov/Publications/Mach_SafeGuard/toc.html</a> and <a href="http://www.slosipe.org">www.slosipe.org</a>.</p>		

### Gate or Barrier

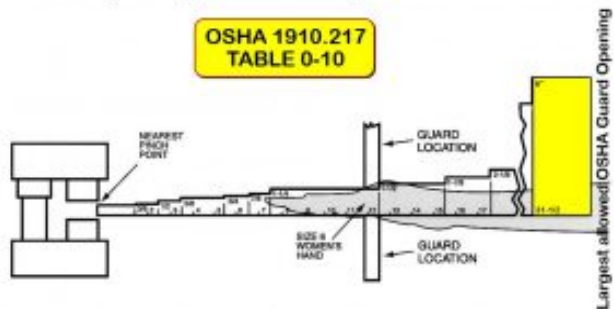
A gate is a movable barrier which protects the operator at the point of operation before the machine cycle can be started. Most gates are designed to be operated with each machine cycle. If the gate is not permitted to descend to the fully closed position, the press will not function. Another potential application of this type of guard is where the gate is a component of a perimeter safeguarding system.



## Appendix B - EXAMPLES OF INADEQUATE SAFE GUARDING

1. **Use of chip shields** – designed to protect against flying chips/debris but not protecting against exposure to rotating parts.
2. **Guard openings that do not meet distance requirements**

Most newer ANSI Standards use a most conservative Guard Opening Scale that requires MORE distance



A guard opening scale can be used to measure guard **openings** and **distances** from the P.O.O.

### 3. Magnetic Shields

